



**VPDES**  
**Permit No.**  
**VA0003026**  
**Renewal Application**

**GP Big Island, LLC**

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FORM 1 GENERAL		U.S. ENVIRONMENTAL PROTECTION AGENCY <b>GENERAL INFORMATION</b> Consolidated Permits Program (Read the "General Instructions" before starting.)		I. EPA I.D. NUMBER	
				S F VAD003113602	
				T/A C D	
				1 2 13 14 15	
LABEL ITEMS		PLEASE PLACE LABEL IN THIS SPACE		GENERAL INSTRUCTIONS	
I. EPA I.D. NUMBER				If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete items I, III, V, and VI (except V-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.	
III. FACILITY NAME					
V. FACILITY MAILING ADDRESS					
VI. FACILITY LOCATION					
II. POLLUTANT CHARACTERISTICS					
INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of <b>bold-faced terms</b> .					
SPECIFIC QUESTIONS			SPECIFIC QUESTIONS		
A. Is this facility a <b>publicly owned treatment works</b> which results in a <b>discharge to waters of the U.S.?</b> (FORM 2A)			B. Does or will this facility (either existing or proposed) include a <b>concentrated animal feeding operation</b> or <b>aquatic animal production facility</b> which results in a <b>discharge to waters of the U.S.?</b> (FORM 2B)		
C. Is this a facility which currently results in <b>discharges to waters of the U.S.</b> other than those described in A or B above? (FORM 2C)			D. Is this a proposed facility (other than those described in A or B above) which will result in a <b>discharge to waters of the U.S.?</b> (FORM 2D)		
E. Does or will this facility treat, store, or dispose of <b>hazardous wastes?</b> (FORM 3)			F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)			H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		
I. Is this facility a proposed <b>stationary source</b> which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)			J. Is this facility a proposed <b>stationary source</b> which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an <b>attainment area?</b> (FORM 5)		
III. NAME OF FACILITY					
C SKIP GP Big Island, LLC					
15 16 29 30 69					
IV. FACILITY CONTACT					
A. NAME & TITLE (last, first, & title)					
B. PHONE (area code & no.)					
C 2 Pierce, Tim - EHS Manager (434) 299-7386					
15 16 45 46 48 49 51 52 55					
V. FACILITY MAILING ADDRESS					
A. STREET OR P.O. BOX					
C 3 P. O. Box 40					
15 16 45					
B. CITY OR TOWN					
C. STATE					
D. ZIP CODE					
C 4 Big Island VA 24526					
15 16 40 41 42 47 51					
VI. FACILITY LOCATION					
A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER					
C 5 9363 Lee Jackson Highway					
15 16 45					
B. COUNTY NAME					
Bedford					
46 70					
C. CITY OR TOWN					
D. STATE					
E. ZIP CODE					
F. COUNTY CODE (if known)					
C 6 Big Island VA 24526					
15 16 40 41 42 47 51 52 54					

CONTINUED FROM THE FRONT

## VII. SIC CODES (4-digit, in order of priority)

A. FIRST										B. SECOND											
C	7	2	6	3	1	(specify)					C	7	2	6	1	1	(specify)				
15	16	17	18	19	Paperboard Mill					15	16	17	18	19	Pulp Mill						
C. THIRD										D. FOURTH											
C	7	(specify)									C	7	(specify)								
15	16	17	18	19						15	16	17	18	19							

## VIII. OPERATOR INFORMATION

A. NAME																									B. Is the name listed in Item VIII-A also the owner?				
C	8	GP Big Island, LLC																							<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				
15	16																												
C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box: if "Other," specify.)																									D. PHONE (area code & no.)				
F = FEDERAL										M = PUBLIC (other than federal or state)										P (specify)					A (434) 299-7386				
S = STATE										O = OTHER (specify)																			
P = PRIVATE																													

E. STREET OR P.O. BOX																								
P. O. Box 40																								

F. CITY OR TOWN																				G. STATE					H. ZIP CODE					IX. INDIAN LAND				
C	8	Big Island															VA					24526					Is the facility located on Indian lands? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO							
15	16																																	

## X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)															D. PSD (Air Emissions from Proposed Sources)																
C	9	N	VA0003026												C	9	P														
15	16	17	18													15	16	17	18												
B. UIC (Underground Injection of Fluids)															E. OTHER (specify)																
C	9	U													C	9	5	4	9	(specify)											
15	16	17	18													15	16	17	18	Solid Waste											
C. RCRA (Hazardous Wastes)															E. OTHER (specify)																
C	9	R	VAD003113602												C	9	(specify)														
15	16	17	18													15	16	17	18	See Attachment A											

## XI. MAP


Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements. See Fig. 1-1

## XII. NATURE OF BUSINESS (provide a brief description)

The GP Big Island, LLC facility produces unbleached, corrugating medium and linerboard for use in the manufacture of corrugated containers (boxes). Raw materials consist of hardwood pulp and pre and post consumer recycled fiber.

## XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)															B. SIGNATURE															C. DATE SIGNED									
Eldon G. Brammer																														9/30/14									
VP Manufacturing, GP Big Island, LLC																																							

## COMMENTS FOR OFFICIAL USE ONLY

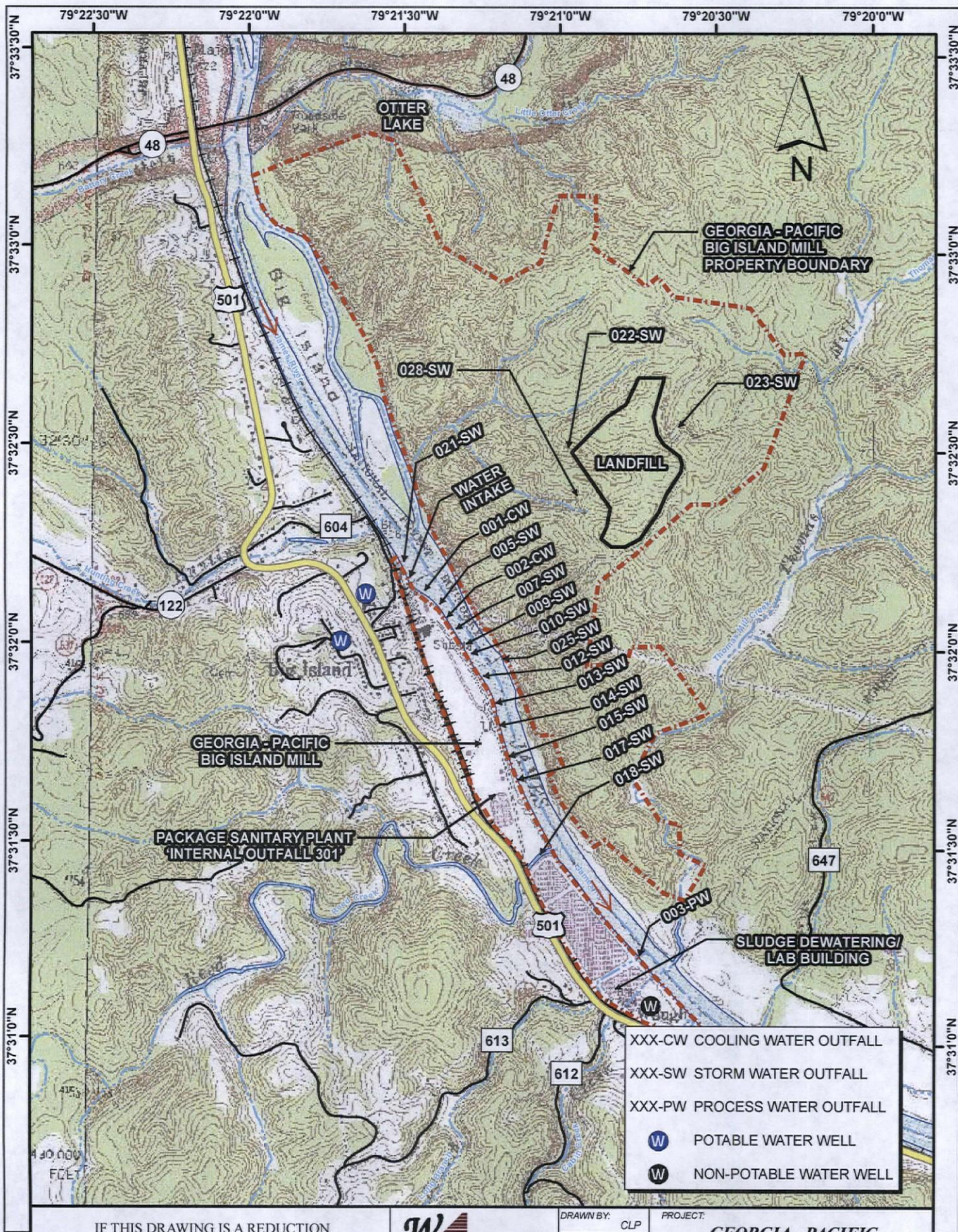
C																									
C																									
15	16																								



**Attachment A to Form 1**  
**Additional Environmental Permits**  
GP Big Island, LLC

<b>Permit Type</b>	<b>Issuance Date</b>	<b>Issuing Agency</b>	<b>Permit No.</b>
Potable Water Supply	3/31/2008	VA Dept. of Health	5019340
Potable Water Supply	12/28/1984	VA Dept. of Health	5019725
Water Intake Forebay Dredging Permit	6/2/2014	VA Marine Resources Commission	2014-0586
Water Intake Forebay Dredging Permit		US Army Corps of Engineers	Appl. No. NAO-2010- 0252
General Nutrient Discharge Permit	11/21/2012	VA DEQ	VAN040066
Linermill/OCC/No. 6 Boiler Permit to Modify & Operate	4/30/2012	VA DEQ	VA-30389
No. 7 Boiler Construction & Operating Permit	12/6/2010	VA DEQ	VA-30389
Recovery Furnace Construction & Operating Permit	5/1/2008	VA DEQ	VA-30389
Linermill/OCC Construction & Operating Permit	6/25/2008	VA DEQ	VA-30389
BART Operating Permit	10/5/2012	VA DEQ	VA-30389
No. 5 Boiler Construction & Operating Permit Modification	8/13/2014	VA DEQ	VA-30389
Title V Air Operating Permit	7/1/2003	VA DEQ	VA-30389





IF THIS DRAWING IS A REDUCTION  
GRAPHIC SCALE MUST BE USED  
U.S. Geological Survey. 1:24,000. 7.5 Minute Series

2,000 0 2,000 Feet

**W**  
**W**  
**ASSOCIATES**  
ENGINEERS  
SURVEYORS  
PLANNERS  
P.O. Box 4119  
Lynchburg, VA 24502  
Phone: 434.316-6080  
Fax: 434.316-2700  
www.wvaassn.com

DRAWN BY: CLP  
REVIEWED BY: HFW  
FILE NAME: USGSMMap.mxd  
PROJECT NUMBER: 209078.00

PROJECT: **GEORGIA - PACIFIC  
BIG ISLAND PAPER MILL**  
TITLE: **FIGURE 1-1  
GP ~ OUTFALLS**

Scale: 1" = 2,000 FT  
Date: 11/17/09  
Figure: 3 - 1



Form Approved.  
OMB No. 2040-0086.  
Approval expires 3-31-98.



Please print or type in the unshaded areas only.

EPA I.D. NUMBER (copy from Item 1 of Form 1)  
VAD003113602Form Approved.  
OMB No. 2040-0086.  
Approval expires 3-31-98.FORM  
2C  
NPDESU.S. ENVIRONMENTAL PROTECTION AGENCY  
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER  
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURE OPERATIONS  
Consolidated Permits Program

## I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	

## II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT	
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1
003	Treated process wastewater from	8.43 MGD	Screening, clarification and coagulation of raw	1-H 1-O
	sodium based, non-sulfur, semi-		river water. Wastewater treatment units:	1-T 1-U
	chemical pulp, non-deink recycled		screening, flotation, sedimentation, mixing,	2-B 2-D
	pulp & paperboard manufacturing		equalization, addition of nitrate or oxygen,	3-A 3-E
	including: pulping chemicals and		activated sludge, polymer addition, stabilization	3-G 4-A
	additives; wood extracts; paper mill		pond, discharge to surface water using	5-C 5-E
	whitewater, additives & spent		subsurface diffuser. Sludge treatment units:	5-G 5-L
	cleaners; water treatment and boiler		gravity thickening, chemical conditioning, belt	5-O 5-Q
	blowdowns; cooling and pump seal		filtration, industrial boiler, landfill, sludge	5-T 5-P
	water; stormwater from woodyard,		lagoons and shipment offsite for composting or	
	boiler ash collection area,		land application.	
	fuel (woodwaste, OCC rejects) storage			
	areas, chemical storage areas and			
	other process areas; process spills			
	and maintenance activities; waste-			
	water polymers and additives;			
	discharge from sludge dewatering			
	operation; leachate from industrial			
	landfill; boilout chemicals.			
	Treated sanitary wastewater (301).			
	Other operations as described in			
	Attachment C.			

OFFICIAL USE ONLY (effluent guidelines sub-categories)



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C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal? <input type="checkbox"/> YES (complete the following table) <input checked="" type="checkbox"/> NO (go to Section III)								
1. OUTFALL NUMBER (list)	2. OPERATION(S) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				C. DURATION (in days)
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		B. TOTAL VOLUME (specify with units)		
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
N/A								

<b>III. PRODUCTION</b>			
A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility? <input checked="" type="checkbox"/> YES (complete Item III-B) <input type="checkbox"/> NO (go to Section IV)			
B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)? <input checked="" type="checkbox"/> YES (complete Item III-C) <input type="checkbox"/> NO (go to Section IV)			
C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.			
1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (list outfall numbers)
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)	
902	Air Dry Tons per Day	Paperboard (corrugating medium) from sodium based (non-sulfur) semi-chemical pulp and wastepaper (secondary fiber, non-deink). Paper machine production divided by the number of operating days for contiguous 12 month period. 40 CFR 430, Subpart F	003
820	Air Dry Tons per Day	Paperboard (corrugating medium and linerboard) from 100% waste paper (secondary fiber, non-deink). Paper machine production divided by the number of operating days for contiguous 12 month period. 40 CFR 430, Subpart J	003

<b>IV. IMPROVEMENTS</b>					
A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions. <input type="checkbox"/> YES (complete the following table) <input checked="" type="checkbox"/> NO (go to Item IV-B)					
1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. NO.	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction. <input type="checkbox"/> MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED	
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## V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – Complete one set of tables for each outfall – Annotate the outfall number in the space provided.

NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
acetaldehyde methyl mercaptan	Inadvertantly manufactured and discharged as a result of the paper making process. Based on factors supplied by the National Council for Air and Stream Improvement (NCASI) for Toxic Release Inventory reporting or direct measurement.		
See Attachment B for substances listed in Table 2C-4 as described in instructions for Form 2C, Part V.D.			

## VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☒ YES (list all such pollutants below )☐ NO (go to Item VI-B)

Trace metals may be present from raw materials and wood including but not limited to:

Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc.

The process operations and the corresponding raw materials are described in the attached "Process Operations Contributing Wastewater - GP Big Island, LLC". All materials are expected to be amenable to treatment in the existing wastewater treatment system consisting of primary clarification, biological treatment and sludge dewatering, and should not cause any exceedances of permit limitations.



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**VII. BIOLOGICAL TOXICITY TESTING DATA**

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ YES (identify the test(s) and describe their purposes below)

☐ NO (go to Section VIII)

Biological monitoring for chronic toxicity has been conducted in accordance with Part I, Section D, Toxics Monitoring Program, of the existing VPDES permit number VA0003026. A summary of the monitoring data is included in Attachment E for reference.

**VIII. CONTRACT ANALYSIS INFORMATION**

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?


☒ YES (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ NO (go to Section IX)

A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
Air, Water & Soil Laboratories, Inc.	2109A North Hamilton Street Richmond, VA 23230	(804) 358-8295	nutrients, metals
REI Consultants, Inc.	225 Industrial Park Drive Beaver, WV 25813	(304) 255-2500	fecal coliform, nutrients, metals, color and other pollutants listed in Parts V.B and V.C of Form 2C
SGS Environmental Services	5500 Business Drive Wilmington, NC 28405	(910) 350-1903	dioxin
Environmental Systems Services, Ltd.	218 North Main St. P.O. Box 520 Culpeper, VA 22701	(540) 825-6660	pollutants listed in Part VII in Form 2F

**IX. CERTIFICATION**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (type or print)	B. PHONE NO. (area code & no.)
Eldon G. Brammer, VP Manufacturing GP Big Island, LLC	(434) 299-5911
C. SIGNATURE	D. DATE SIGNED
	9/30/14



PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.  
SEE INSTRUCTIONS.

EPA I.D. NUMBER (copy from Item 1 of Form 1)  
VAD003113602

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)	OUTFALL NO. 001
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PART A –You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS <i>(specify if blank)</i>		4. INTAKE <i>(optional)</i>		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE <i>(if available)</i>		c. LONG TERM AVRG. VALUE <i>(if available)</i>		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1)		(1)		(1)	(2)				(1)		
	CONCENTRATION	(2) MASS	CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand <i>(BOD)</i>	9	2.09	5	0.57	<5	<0.34	52	mg/l	kg/d	NA	NA	
b. Chemical Oxygen Demand <i>(COD)</i>	13	0.689	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
c. Total Organic Carbon <i>(TOC)</i>	3.49	0.185	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
d. Total Suspended Solids <i>(TSS)</i>	4	0.212	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
e. Ammonia <i>(as N)</i>	<0.10	<0.005	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
f. Flow	VALUE 0.079		VALUE 0.030		VALUE 0.018		356	MGD	MGD	VALUE NA		
g. Temperature <i>(winter)</i>	VALUE 26.6		VALUE 22.4		VALUE 19.3		104	°C		VALUE NA		
h. Temperature <i>(summer)</i>	VALUE 36.5		VALUE 31.4		VALUE 27.9		150	°C		VALUE NA		
i. pH	MINIMUM 7.2	MAXIMUM 8.4	MINIMUM 7.8	MAXIMUM 8.2			254	STANDARD UNITS				

PART B – Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. <i>(if available)</i>	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE <i>(optional)</i>		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE <i>(if available)</i>		c. LONG TERM AVRG. VALUE <i>(if available)</i>		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)	✗		<0.10	<0.005					1	mg/l	kg/d			
b. Chlorine, Total Residual		✗	0.03	0.009					1	mg/l	kg/d			
c. Color	✗		25	---	22	---	15	---	52	PCU	---			
d. Fecal Coliform		✗	1	---					1	C/100 mL	---			
e. Fluoride (16984-48-8)	✗		0.08	0.023					1	mg/l	kg/d			
f. Nitrate-Nitrite (as N)	✗		0.31	0.016					1	mg/l	kg/d			

Parameters with a "<" symbol indicate no measured result down to the method detection limit. It is believed that the Total Residual Chlorine value is caused by an interference in the method.



## ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)	X		0.11	0.006					1	mg/l	kg/d			
h. Oil and Grease		X	<5.0	<0.322					1	mg/l	kg/d			
i. Phosphorus (as P), Total (7723-14-0)	X		<0.05	<0.003					1	mg/l	kg/d			
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO <sub>4</sub> ), (14808-79-8)	X		38.1	2.02					1	mg/l	kg/d			
l. Sulfide (as S)		X												
m. Sulfite (as SO <sub>3</sub> ), (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)	X		0.0979	0.005					1	mg/l	kg/d			
p. Barium, Total (7440-39-3)	X		0.0558	0.003					1	mg/l	kg/d			
q. Boron, Total (7440-42-8)	X		<0.05	<0.003					1	mg/l	kg/d			
r. Cobalt, Total (7440-48-4)	X		<0.005	<0.0003					1	mg/l	kg/d			
s. Iron, Total (7439-89-6)	X		0.152	0.008					1	mg/l	kg/d			
t. Magnesium, Total (7439-95-4)	X		7.85	0.416					1	mg/l	kg/d			
u. Molybdenum, Total (7439-98-7)	X		<0.005	<0.0003					1	mg/l	kg/d			
v. Manganese, Total (7439-96-5)	X		0.0219	0.001					1	mg/l	kg/d			
w. Tin, Total (7440-31-5)		X	<0.5	<0.026					1	mg/l	kg/d			
x. Titanium, Total (7440-32-6)	X		0.002 J	0.0001					1	mg/l	kg/d			

For a "J" qualifier, the analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.

EPA I.D. NUMBER (copy from Item 1 of Form 1)

OUTFALL NUMBER

VAD003113602

001

CONTINUED FROM PAGE 3 OF FORM 2-C

**PART C -** If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (*secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions*), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES		
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS			
																(1) CONCENTRATION	(2) MASS
<b>METALS, CYANIDE, AND TOTAL PHENOLS</b>																	
1M. Antimony, Total (7440-36-0)		X		<0.02	<0.001					1	mg/l	kg/d					
2M. Arsenic, Total (7440-38-2)			X														
3M. Beryllium, Total (7440-41-7)			X														
4M. Cadmium, Total (7440-43-9)		X		<0.001	0.0001					1	mg/l	kg/d					
5M. Chromium, Total (7440-47-3)		X		0.0012 J	0.0001					1	mg/l	kg/d					
6M. Copper, Total (7440-50-8)		X		0.0038 J	0.0002					1	mg/l	kg/d					
7M. Lead, Total (7439-92-1)		X		<0.01	<0.001					1	mg/l	kg/d					
8M. Mercury, Total (7439-97-6)			X	<0.001	0.0001					1	mg/l	kg/d					
9M. Nickel, Total (7440-02-0)		X		<0.005	0.0003					1	mg/l	kg/d					
10M. Selenium, Total (7782-49-2)			X	<0.02	<0.001					1	mg/l	kg/d					
11M. Silver, Total (7440-22-4)			X	<0.005	0.0003					1	mg/l	kg/d					
12M. Thallium, Total (7440-28-0)			X														
13M. Zinc, Total (7440-66-6)		X		0.0031 J	0.0002					1	mg/l	kg/d					
14M. Cyanide, Total (57-12-5)			X														
15M. Phenols, Total			X														
<b>DIOXIN</b>																	
2,3,7,8-Tetra- chlorodibenzo-P- Dioxin (1764-01-6)			X	DESCRIBE RESULTS													



CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)					
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES				
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS					
GC/MS FRACTION – VOLATILE COMPOUNDS																			
1V. Accrolein (107-02-8)			X																
2V. Acrylonitrile (107-13-1)			X																
3V. Benzene (71-43-2)			X																
4V. Bis (Chloro- methyl) Ether (542-88-1)				DELISTED	02-4-81	ANALYSIS	NOT	REQUIRED	FOR	THIS									
5V. Bromoform (75-25-2)			X																
6V. Carbon Tetrachloride (56-23-5)			X																
7V. Chlorobenzene (108-90-7)			X																
8V. Chlorodi- bromomethane (124-48-1)			X																
9V. Chloroethane (75-00-3)			X																
10V. 2-Chloro- ethylvinyl Ether (110-75-8)			X																
11V. Chloroform (67-66-3)			X																
12V. Dichloro- bromomethane (75-27-4)			X																
13V. Dichloro- difluoromethane (75-71-8)				DELISTED	01-8-81	ANALYSIS	NOT	REQUIRED	FOR	THIS									
14V. 1,1-Dichloro- ethane (75-34-3)			X																
15V. 1,2-Dichloro- ethane (107-06-2)			X																
16V. 1,1-Dichloro- ethylene (75-35-4)			X																
17V. 1,2-Dichloro- propane (78-87-5)			X																
18V. 1,3-Dichloro- propylene (542-75-6)			X																
19V. Ethylbenzene (100-41-4)			X																
20V. Methyl Bromide (74-83-9)			X																
21V. Methyl Chloride (74-87-3)			X																



CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES	
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
																(1) CONCENTRATION
GC/MS FRACTION – VOLATILE COMPOUNDS (continued)																
22V. Methylene Chloride (75-09-2)			X													
23V. 1,1,2,2-Tetrachloroethane (79-34-5)			X													
24V. Tetrachloroethylene (127-18-4)			X													
25V. Toluene (108-88-3)			X													
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X													
27V. 1,1,1-Trichloroethane (71-55-6)			X													
28V. 1,1,2-Trichloroethane (79-00-5)			X													
29V. Trichloroethylene (79-01-6)			X													
30V. Trichlorofluoromethane (75-69-4)				DELISTED	01-8-81	ANALYSIS	NOT	REQUIRED	FOR	THIS						
31V. Vinyl Chloride (75-01-4)			X													
GC/MS FRACTION – ACID COMPOUNDS																
1A. 2-Chlorophenol (95-57-8)			X													
2A. 2,4-Dichlorophenol (120-83-2)			X													
3A. 2,4-Dimethylphenol (105-67-9)			X													
4A. 4,6-Dinitro-O-Cresol (534-52-1)			X													
5A. 2,4-Dinitrophenol (51-28-5)			X													
6A. 2-Nitrophenol (88-75-5)			X													
7A. 4-Nitrophenol (100-02-7)			X													
8A. P-Chloro-M-Cresol (59-50-7)			X													
9A. Pentachlorophenol (87-86-5)			X													
10A. Phenol (108-95-2)			X													
11A. 2,4,6-Trichlorophenol (88-05-2)			X													

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphthylene (208-96-8)			X												
3B. Anthracene (120-12-7)			X												
4B. Benzidine (92-87-5)			X												
5B. Benzo (a) Anthracene (56-55-3)			X												
6B. Benzo (a) Pyrene (50-32-8)			X												
7B. 3,4-Benzo- fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro- ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro- ethyl) Ether (111-44-4)			X												
12B. Bis (2- Chloroisopropyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl- hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromophenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro- naphthalene (91-58-7)			X												
17B. 4-Chloro- phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro- benzene (95-50-1)			X												
21B. 1,3-Di-chloro- benzene (541-73-1)			X												

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE	b. NO. OF ANALYSES		
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)																
22B. 1,4-Dichlorobenzene (106-46-7)			X													
23B. 3,3-Dichlorobenzidine (91-94-1)			X													
24B. Diethyl Phthalate (84-66-2)			X													
25B. Dimethyl Phthalate (131-11-3)			X													
26B. Di-N-Butyl Phthalate (84-74-2)			X													
27B. 2,4-Dinitrotoluene (121-14-2)			X													
28B. 2,6-Dinitrotoluene (606-20-2)			X													
29B. Di-N-Octyl Phthalate (117-84-0)			X													
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)			X													
31B. Fluoranthene (206-44-0)			X													
32B. Fluorene (86-73-7)			X													
33B. Hexachlorobenzene (118-74-1)			X													
34B. Hexachlorobutadiene (87-68-3)			X													
35B. Hexachlorocyclopentadiene (77-47-4)			X													
36B. Hexachloroethane (67-72-1)			X													
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)			X													
38B. Isophorone (78-59-1)			X													
39B. Naphthalene (91-20-3)			X													
40B. Nitrobenzene (98-95-3)			X													
41B. N-Nitrosodimethylamine (62-75-9)			X													
42B. N-Nitrosodi-N-Propylamine (621-64-7)			X													

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES	
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
																(1) CONCENTRATION
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)																
43B. N-Nitro- sodiphenylamine (86-30-6)			X													
44B. Phenanthrene (85-01-8)			X													
45B. Pyrene (129-00-0)			X													
46B. 1,2,4-Tri- chlorobenzene (120-82-1)			X													
GC/MS FRACTION – PESTICIDES																
1P. Aldrin (309-00-2)			X													
2P. α-BHC (319-84-6)			X													
3P. β-BHC (319-85-7)			X													
4P. γ-BHC (58-89-9)			X													
5P. δ-BHC (319-86-8)			X													
6P. Chlordane (57-74-9)			X													
7P. 4,4'-DDT (50-29-3)			X													
8P. 4,4'-DDE (72-55-9)			X													
9P. 4,4'-DDD (72-54-8)			X													
10P. Dieldrin (60-57-1)			X													
11P. α-Endosulfan (115-29-7)			X													
12P. β-Endosulfan (115-29-7)			X													
13P. Endosulfan Sulfate (1031-07-8)			X													
14P. Endrin (72-20-8)			X													
15P. Endrin Aldehyde (7421-93-4)			X													
16P. Heptachlor (76-44-8)			X													

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES		
				(1)	(2)	(1)	(2)	(1)	(2)				(1)	(2)			
				CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS				CONCENTRATION	MASS			
GC/MS FRACTION - PESTICIDES (continued)																	
17P. Heptachlor Epoxide (1024-57-3)			X														
18P. PCB-1242 (53469-21-9)			X														
19P. PCB-1254 (11097-69-1)			X														
20P. PCB-1221 (11104-28-2)			X														
21P. PCB-1232 (11141-16-5)			X														
22P. PCB-1248 (12672-29-6)			X														
23P. PCB-1260 (11096-82-5)			X														
24P. PCB-1016 (12674-11-2)			X														
25P. Toxaphene (8001-35-2)			X														



PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.  
SEE INSTRUCTIONS.

EPA I.D. NUMBER (copy from Item 1 of Form 1)  
VAD003113602

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)	OUTFALL NO. 002
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PART A –You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT						3. UNITS <i>(specify if blank)</i>		4. INTAKE <i>(optional)</i>			
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE <i>(if available)</i>		c. LONG TERM AVRG. VALUE <i>(if available)</i>		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1)	(2)	(1)	(2)	(1)	(2)				(1)	(2)	
	CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS				CONCENTRATION	MASS	
a. Biochemical Oxygen Demand <i>(BOD)</i>	<5	<180	<5	<116	<5	<87	52	mg/l	kg/d	NA	NA	
b. Chemical Oxygen Demand <i>(COD)</i>	12	173.96	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
c. Total Organic Carbon <i>(TOC)</i>	3.99	57.84	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
d. Total Suspended Solids <i>(TSS)</i>	8	115.97	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
e. Ammonia <i>(as N)</i>	<0.10	<1.450	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
f. Flow	VALUE 9.10		VALUE 6.15		VALUE 4.62		362	MGD	MGD	VALUE NA		
g. Temperature <i>(winter)</i>	VALUE 25.1		VALUE 17.8		VALUE 14.8		107	°C		VALUE NA		
h. Temperature <i>(summer)</i>	VALUE 40.3		VALUE 36.5		VALUE 30.3		153	°C		VALUE NA		
i. pH	MINIMUM 7.0	MAXIMUM 8.5	MINIMUM 7.8	MAXIMUM 8.2			260	STANDARD UNITS				

PART B – Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. <i>(if available)</i>	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE <i>(optional)</i>		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE <i>(if available)</i>		c. LONG TERM AVRG. VALUE <i>(if available)</i>		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)	X		<0.10	<1.450					1	mg/l	kg/d			
b. Chlorine, Total Residual		X	0.06	0.881					1	mg/l	kg/d			
c. Color	X		25	---	23	---	15	---	52	PCU	---			
d. Fecal Coliform		X	4	---					1	C/100 mL	---			
e. Fluoride (16984-48-8)	X		0.14	1.918					1	mg/l	kg/d			
f. Nitrate-Nitrite (as N)	X		0.31	4.494					1	mg/l	kg/d			

Parameters with a "<" symbol indicate no measured result down to the method detection limit. It is believed that the Total Residual Chlorine value is caused by an interference in the method.



## ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)	X		0.16	2.319					1	mg/l	kg/d			
h. Oil and Grease		X	<5.0	<80.43					1	mg/l	kg/d			
i. Phosphorus (as P), Total (7723-14-0)	X		0.02 J	0.290					1	mg/l	kg/d			
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO <sub>4</sub> ) (14808-79-8)	X		36.9	534.92					1	mg/l	kg/d			
l. Sulfide (as S)		X												
m. Sulfite (as SO <sub>3</sub> ) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)	X		0.138	2.001					1	mg/l	kg/d			
p. Barium, Total (7440-39-3)	X		0.0569	0.825					1	mg/l	kg/d			
q. Boron, Total (7440-42-8)	X		0.0160 J	0.232					1	mg/l	kg/d			
r. Cobalt, Total (7440-48-4)	X		<0.005	<0.072					1	mg/l	kg/d			
s. Iron, Total (7439-89-6)	X		0.265	3.842					1	mg/l	kg/d			
t. Magnesium, Total (7439-95-4)	X		8.17	118.44					1	mg/l	kg/d			
u. Molybdenum, Total (7439-98-7)	X		<0.005	<0.072					1	mg/l	kg/d			
v. Manganese, Total (7439-96-5)	X		0.0332	0.481					1	mg/l	kg/d			
w. Tin, Total (7440-31-5)		X	<0.5	<7.248					1	mg/l	kg/d			
x. Titanium, Total (7440-32-6)	X		<0.01	<0.145					1	mg/l	kg/d			

For a "J" qualifier, the analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
VAD003113602	002

CONTINUED FROM PAGE 3 OF FORM 2-C

**PART C -** If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN-TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
<b>METALS, CYANIDE, AND TOTAL PHENOLS</b>															
1M. Antimony, Total (7440-36-0)		X		<0.02	<0.290					1	mg/l	kg/d			
2M. Arsenic, Total (7440-38-2)			X												
3M. Beryllium, Total (7440-41-7)			X												
4M. Cadmium, Total (7440-43-9)		X		<0.001	<0.014					1	mg/l	kg/d			
5M. Chromium, Total (7440-47-3)		X		0.0012 J	0.017					1	mg/l	kg/d			
6M. Copper, Total (7440-50-8)		X		0.0031 J	0.045					1	mg/l	kg/d			
7M. Lead, Total (7439-92-1)		X		<0.01	<0.145					1	mg/l	kg/d			
8M. Mercury, Total (7439-97-6)			X	<0.001	<0.014					1	mg/l	kg/d			
9M. Nickel, Total (7440-02-0)		X		<0.005	<0.072					1	mg/l	kg/d			
10M. Selenium, Total (7782-49-2)			X	<0.02	<0.290					1	mg/l	kg/d			
11M. Silver, Total (7440-22-4)			X	<0.005	<0.072					1	mg/l	kg/d			
12M. Thallium, Total (7440-28-0)			X												
13M. Zinc, Total (7440-66-6)		X		0.0042 J	0.061					1	mg/l	kg/d			
14M. Cyanide, Total (57-12-5)			X												
15M. Phenols, Total			X												
<b>DIOXIN</b>															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)			X	DESCRIBE RESULTS											



CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES	
				(1)	(2)	(1)	(2)	(1)	(2)				(1)	(2)		
				CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS				CONCENTRATION	MASS		
GC/MS FRACTION - VOLATILE COMPOUNDS																
1V. Accrolein (107-02-8)			X													
2V. Acrylonitrile (107-13-1)			X													
3V. Benzene (71-43-2)			X													
4V. Bis (Chloro- methyl) Ether (542-88-1)				DELISTED	02-4-81	ANALYSIS	NOT	REQUIRED	FOR	THIS						
5V. Bromoform (75-25-2)			X													
6V. Carbon Tetrachloride (56-23-5)			X													
7V. Chlorobenzene (108-90-7)			X													
8V. Chlorodi- bromomethane (124-48-1)			X													
9V. Chloroethane (75-00-3)			X													
10V. 2-Chloro- ethylvinyl Ether (110-75-8)			X													
11V. Chloroform (67-66-3)			X													
12V. Dichloro- bromomethane (75-27-4)			X													
13V. Dichloro- difluoromethane (75-71-8)				DELISTED	01-8-81	ANALYSIS	NOT	REQUIRED	FOR	THIS						
14V. 1,1-Dichloro- ethane (75-34-3)			X													
15V. 1,2-Dichloro- ethane (107-06-2)			X													
16V. 1,1-Dichloro- ethylene (75-35-4)			X													
17V. 1,2-Dichloro- propane (78-87-5)			X													
18V. 1,3-Dichloro- propylene (542-75-6)			X													
19V. Ethylbenzene (100-41-4)			X													
20V. Methyl Bromide (74-83-9)			X													
21V. Methyl Chloride (74-87-3)			X													



CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)			X												
23V. 1,1,2,2-Tetrachloroethane (79-34-5)			X												
24V. Tetrachloroethylene (127-18-4)			X												
25V. Toluene (108-88-3)			X												
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X												
27V. 1,1,1-Trichloroethane (71-55-6)			X												
28V. 1,1,2-Trichloroethane (79-00-5)			X												
29V Trichloroethylene (79-01-6)			X												
30V. Trichlorofluoromethane (75-69-4)				DELISTED	01-8-81	ANALYSIS	NOT	REQUIRED	FOR	THIS					
31V. Vinyl Chloride (75-01-4)			X												
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X												
2A. 2,4-Dichlorophenol (120-83-2)			X												
3A. 2,4-Dimethylphenol (105-67-9)			X												
4A. 4,6-Dinitro-O-Cresol (534-52-1)			X												
5A. 2,4-Dinitrophenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X												
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M-Cresol (59-50-7)			X												
9A. Pentachlorophenol (87-86-5)			X												
10A. Phenol (108-95-2)			X												
11A. 2,4,6-Trichlorophenol (88-05-2)			X												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphthylene (208-96-8)			X												
3B. Anthracene (120-12-7)			X												
4B. Benzidine (92-87-5)			X												
5B. Benzo (a) Anthracene (56-55-3)			X												
6B. Benzo (a) Pyrene (50-32-8)			X												
7B. 3,4-Benzo- fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-Chloro- ethoxy) Methane (111-91-1)			X												
11B. Bis (2-Chloro- ethyl) Ether (111-44-4)			X												
12B. Bis (2- Chloroisopropyl) Ether (102-80-1)			X												
13B. Bis (2-Ethyl- hexyl) Phthalate (117-81-7)			X												
14B. 4-Bromophenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloro- naphthalene (91-58-7)			X												
17B. 4-Chloro- phenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichloro- benzene (95-50-1)			X												
21B. 1,3-Di-chloro- benzene (541-73-1)			X												

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichloro- benzene (106-46-7)			X												
23B. 3,3-Dichloro- benzidine (91-94-1)			X												
24B. Diethyl Phthalate (84-66-2)			X												
25B. Dimethyl Phthalate (131-11-3)			X												
26B. Di-N-Butyl Phthalate (84-74-2)			X												
27B. 2,4-Dinitro- toluene (121-14-2)			X												
28B. 2,6-Dinitro- toluene (606-20-2)			X												
29B. Di-N-Octyl Phthalate (117-84-0)			X												
30B. 1,2-Diphenyl- hydrazine (as Azo- benzene) (122-66-7)			X												
31B. Fluoranthene (206-44-0)			X												
32B. Fluorene (86-73-7)			X												
33B. Hexachloro- benzene (118-74-1)			X												
34B. Hexachloro- butadiene (87-68-3)			X												
35B. Hexachloro- cyclopentadiene (77-47-4)			X												
36B Hexachloro- ethane (67-72-1)			X												
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)			X												
38B. Isophorone (78-59-1)			X												
39B. Naphthalene (91-20-3)			X												
40B. Nitrobenzene (98-95-3)			X												
41B. N-Nitro- sodimethylamine (62-75-9)			X												
42B. N-Nitrosodi- N-Propylamine (621-64-7)			X												

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES	
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS (continued)																
43B. N-Nitro- sodiphenylamine (86-30-6)			X													
44B. Phenanthrene (85-01-8)			X													
45B. Pyrene (129-00-0)			X													
46B. 1,2,4-Tri- chlorobenzene (120-82-1)			X													
GC/MS FRACTION - PESTICIDES																
1P. Aldrin (309-00-2)			X													
2P. α-BHC (319-84-6)			X													
3P. β-BHC (319-85-7)			X													
4P. γ-BHC (58-89-9)			X													
5P. δ-BHC (319-86-8)			X													
6P. Chlordane (57-74-9)			X													
7P. 4,4'-DDT (50-29-3)			X													
8P. 4,4'-DDE (72-55-9)			X													
9P. 4,4'-DDD (72-54-8)			X													
10P. Dieldrin (60-57-1)			X													
11P. α-Endosulfan (115-29-7)			X													
12P. β-Endosulfan (115-29-7)			X													
13P. Endosulfan Sulfate (1031-07-8)			X													
14P. Endrin (72-20-8)			X													
15P. Endrin Aldehyde (7421-93-4)			X													
16P. Heptachlor (76-44-8)			X													



EPA I.D. NUMBER (copy from Item 1 of Form 1)

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002

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES	
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
GC/MS FRACTION – PESTICIDES (continued)																
17P. Heptachlor Epoxide (1024-57-3)			X													
18P. PCB-1242 (53469-21-9)			X													
19P. PCB-1254 (11097-69-1)			X													
20P. PCB-1221 (11104-28-2)			X													
21P. PCB-1232 (11141-16-5)			X													
22P. PCB-1248 (12672-29-6)			X													
23P. PCB-1260 (11096-82-5)			X													
24P. PCB-1016 (12674-11-2)			X													
25P. Toxaphene (8001-35-2)			X													

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.  
SEE INSTRUCTIONS.

EPA I.D. NUMBER (copy from Item 1 of Form 1)  
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V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)		OUTFALL NO. 003
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PART A –You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT							3. UNITS <i>(specify if blank)</i>		4. INTAKE <i>(optional)</i>		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE <i>(if available)</i>		c. LONG TERM AVRG. VALUE <i>(if available)</i>		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1)	(2)	(1)	(2)	(1)	(2)				(1)	(2)	
	CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS				CONCENTRATION	MASS	
a. Biochemical Oxygen Demand ( <i>BOD</i> )	27	818	11	355	9	293	157	mg/l	kg/d	NA	NA	
b. Chemical Oxygen Demand ( <i>COD</i> )	214	7980	118	3708	92	2960	257	mg/l	kg/d	NA	NA	
c. Total Organic Carbon ( <i>TOC</i> )	39.1	1385	NA	NA	NA	NA	1	mg/l	kg/d	NA	NA	
d. Total Suspended Solids ( <i>TSS</i> )	36	1154	17	566	11	362	157	mg/l	kg/d	NA	NA	
e. Ammonia ( <i>as N</i> )	0.78	22.61	0.78	22.61	0.35	10.28	6	mg/l	kg/d	NA	NA	
f. Flow	VALUE 11.30		VALUE 8.91		VALUE 8.43		365	MGD	MGD	VALUE NA		
g. Temperature ( <i>winter</i> )	VALUE 20.4		VALUE 14.0		VALUE 11.7		107	°C		VALUE NA		
h. Temperature ( <i>summer</i> )	VALUE 30.7		VALUE 28.2		VALUE 24.5		153	°C		VALUE NA		
i. pH	MINIMUM 6.8	MAXIMUM 8.1	MINIMUM 7.6	MAXIMUM 7.9			260	STANDARD UNITS				

PART B – Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. <i>(if available)</i>	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE <i>(optional)</i>		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE <i>(if available)</i>		c. LONG TERM AVRG. VALUE <i>(if available)</i>		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1)	(2)	(1)	(2)	(1)	(2)				(1)	(2)	
			CONCENTRATION	MASS	CONCENTRATION	MASS	CONCENTRATION	MASS				CONCENTRATION	MASS	
a. Bromide (24959-67-9)	X		1.29	45.70					1	mg/l	kg/d			
b. Chlorine, Total Residual		X	0.63	19.55					1	mg/l	kg/d			
c. Color	X		1000	---	781	---	689	---	52	PCU	---			
d. Fecal Coliform		X	13	---					1	col/100m	---			
e. Fluoride (16984-48-8)	X		0.21	6.30					1	mg/l	kg/d			
f. Nitrate-Nitrite (as N)	X		1.20	37.97	0.66	21.83	0.14	4.41	52	mg/l	kg/d			

Parameters with a "<" symbol indicate no measured result down to the method detection limit. It is believed that the Total Residual Chlorine value is caused by an interference in the method.



## ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT							4. UNITS		5. INTAKE (optional)						
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES				
			(1)		(1)		(1)					(1)						
			CONCENTRATION	(2) MASS	CONCENTRATION	(2) MASS	CONCENTRATION	(2) MASS				CONCENTRATION	(2) MASS					
g. Nitrogen, Total Organic (as N)	X		7.95	239.82	7.95	239.82	1.52	89.11	7	mg/l	kg/d							
h. Oil and Grease	X		<5.0	<179.79					1	mg/l	kg/d							
i. Phosphorus (as P), Total (7723-14-0)	X		1.25	38.28	0.68	22.50	0.21	6.89	53	mg/l	kg/d							
j. Radioactivity																		
(1) Alpha, Total		X																
(2) Beta, Total		X																
(3) Radium, Total		X																
(4) Radium 226, Total		X																
k. Sulfate (as SO <sub>4</sub> ) (14808-79-8)	X		65.4	2317					1	mg/l	kg/d							
l. Sulfide (as S)	X		<1	<30.02					1	mg/l	kg/d							
m. Sulfite (as SO <sub>3</sub> ) (14265-45-3)		X																
n. Surfactants	X		<0.0625	<2.21					1	mg/l	kg/d							
o. Aluminum, Total (7429-90-5)	X		0.183	6.48					1	mg/l	kg/d							
p. Barium, Total (7440-39-3)	X		0.172	6.09					1	mg/l	kg/d							
q. Boron, Total (7440-42-8)	X		1.19	42.16					1	mg/l	kg/d							
r. Cobalt, Total (7440-48-4)	X		0.0011 J	0.039					1	mg/l	kg/d							
s. Iron, Total (7439-89-6)	X		0.0807	2.86					1	mg/l	kg/d							
t. Magnesium, Total (7439-95-4)	X		8.97	317.79					1	mg/l	kg/d							
u. Molybdenum, Total (7439-98-7)	X		0.0033 J	0.117					1	mg/l	kg/d							
v. Manganese, Total (7439-96-5)	X		0.0705	2.50					1	mg/l	kg/d							
w. Tin, Total (7440-31-5)	X		<0.5	<17.71					1	mg/l	kg/d							
x. Titanium, Total (7440-32-6)	X		<0.01	<0.354					1	mg/l	kg/d							

For a "J" qualifier, the analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.

EPA I.D. NUMBER (copy from Item 1 of Form 1)

OUTFALL NUMBER

VAD003113602

003

CONTINUED FROM PAGE 3 OF FORM 2-C

**PART C -** If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (*secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions*), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (*all 7 pages*) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
<b>METALS, CYANIDE, AND TOTAL PHENOLS</b>															
1M. Antimony, Total (7440-36-0)	X			<0.02	<0.709					1	mg/l	kg/d			
2M. Arsenic, Total (7440-38-2)	X			<0.02	<0.600					1	mg/l	kg/d			
3M. Beryllium, Total (7440-41-7)	X			<0.001	<0.030					1	mg/l	kg/d			
4M. Cadmium, Total (7440-43-8)	X			<0.001	<0.035					1	mg/l	kg/d			
5M. Chromium, Total (7440-47-3)	X			0.0021 J	0.074					1	mg/l	kg/d			
6M. Copper, Total (7440-50-8)	X			<0.005	<0.177					1	mg/l	kg/d			
7M. Lead, Total (7439-92-1)	X			<0.01	<0.354					1	mg/l	kg/d			
8M. Mercury, Total (7439-97-6)	X			<0.001	<0.035					1	mg/l	kg/d			
9M. Nickel, Total (7440-02-0)	X			0.0026 J	0.092					1	mg/l	kg/d			
10M. Selenium, Total (7782-49-2)	X			<0.02	<0.709					1	mg/l	kg/d			
11M. Silver, Total (7440-22-4)	X			<0.005	<0.177					1	mg/l	kg/d			
12M. Thallium, Total (7440-28-0)	X			<0.01	<0.354					1	mg/l	kg/d			
13M. Zinc, Total (7440-66-6)	X			0.0055 J	0.195					1	mg/l	kg/d			
14M. Cyanide, Total (57-12-5)	X			0.012 J	0.431					1	mg/l	kg/d			
15M. Phenols, Total	X			<0.01	<0.300					1	mg/l	kg/d			
<b>DIOXIN</b>															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)			X	DESCRIBE RESULTS ND at reporting limit of 8.24 ppq											



CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Accrolein (107-02-8)	X			<500	<15.00					1	ug/l	kg/d			
2V. Acrylonitrile (107-13-1)	X			<50	<1.771					1	ug/l	kg/d			
3V. Benzene (71-43-2)	X			<5	<0.177					1	ug/l	kg/d			
4V. Bis (Chloro- methyl) Ether (542-88-1)				DELISTED	02-4-81	ANALYSIS	NOT	REQUIRED	FOR	THIS					
5V. Bromoform (75-25-2)	X			<5	<0.177					1	ug/l	kg/d			
6V. Carbon Tetrachloride (56-23-5)	X			<5	<0.177					1	ug/l	kg/d			
7V. Chlorobenzene (108-90-7)	X			<5	<0.177					1	ug/l	kg/d			
8V. Chlorodi- bromomethane (124-48-1)	X			<5	<0.177					1	ug/l	kg/d			
9V. Chloroethane (75-00-3)	X			<5	<0.177					1	ug/l	kg/d			
10V. 2-Chloro- ethylvinyl Ether (110-75-8)	X			<50	<1.501					1	ug/l	kg/d			
11V. Chloroform (67-66-3)	X			<5	<0.177					1	ug/l	kg/d			
12V. Dichloro- bromomethane (75-27-4)	X			<5	<0.177					1	ug/l	kg/d			
13V. Dichloro- difluoromethane (75-71-8)				DELISTED	01-8-81	ANALYSIS	NOT	REQUIRED	FOR	THIS					
14V. 1,1-Dichloro- ethane (75-34-3)	X			<5	<0.177					1	ug/l	kg/d			
15V. 1,2-Dichloro- ethane (107-06-2)	X			<5	<0.177					1	ug/l	kg/d			
16V. 1,1-Dichloro- ethylene (75-35-4)	X			<5	<0.177					1	ug/l	kg/d			
17V. 1,2-Dichloro- propane (78-87-5)	X			<5	<0.177					1	ug/l	kg/d			
18V. 1,3-Dichloro- propylene (542-75-6)	X			<5	<0.177					1	ug/l	kg/d			
19V. Ethylbenzene (100-41-4)	X			<5	<0.177					1	ug/l	kg/d			
20V. Methyl Bromide (74-83-9)	X			<5	<0.177					1	ug/l	kg/d			
21V. Methyl Chloride (74-87-3)	X			<5	<0.177					1	ug/l	kg/d			



CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE (optional)					
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES				
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS					
GC/MS FRACTION – VOLATILE COMPOUNDS (continued)																			
22V. Methylene Chloride (75-09-2)	X			<5	<0.177					1	ug/l	kg/d							
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			<5	<0.177					1	ug/l	kg/d							
24V. Tetrachloroethylene (127-18-4)	X			<5	<0.177					1	ug/l	kg/d							
25V. Toluene (108-88-3)	X			<5	<0.177					1	ug/l	kg/d							
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<5	<0.177					1	ug/l	kg/d							
27V. 1,1,1-Trichloroethane (71-55-6)	X			<5	<0.177					1	ug/l	kg/d							
28V. 1,1,2-Trichloroethane (79-00-5)	X			<5	<0.177					1	ug/l	kg/d							
29V Trichloroethylene (79-01-6)	X			<5	<0.177					1	ug/l	kg/d							
30V. Trichlorofluoromethane (75-69-4)				<b>DELISTED</b>	<b>01-8-81</b>	<b>ANALYSIS</b>	<b>NOT</b>	<b>REQUIRED</b>	<b>FOR</b>	<b>THIS</b>									
31V. Vinyl Chloride (75-01-4)	X			<5	<0.177					1	ug/l	kg/d							
GC/MS FRACTION – ACID COMPOUNDS																			
1A. 2-Chlorophenol (95-57-8)	X			<0.0104	<0.368					1	mg/l	kg/d							
2A. 2,4-Dichlorophenol (120-83-2)	X			<0.0104	<0.368					1	mg/l	kg/d							
3A. 2,4-Dimethylphenol (105-67-9)	X			<0.0104	<0.368					1	mg/l	kg/d							
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<0.0104	<0.368					1	mg/l	kg/d							
5A. 2,4-Dinitrophenol (51-28-5)	X			<0.0104	<0.368					1	mg/l	kg/d							
6A. 2-Nitrophenol (88-75-5)	X			<0.0104	<0.368					1	mg/l	kg/d							
7A. 4-Nitrophenol (100-02-7)	X			<0.0104	<0.368					1	mg/l	kg/d							
8A. P-Chloro-M-Cresol (59-50-7)	X			<0.0104	<0.368					1	mg/l	kg/d							
9A. Pentachlorophenol (87-86-5)	X			<0.0104	<0.368					1	mg/l	kg/d							
10A. Phenol (108-95-2)	X			<0.0104	<0.368					1	mg/l	kg/d							
11A. 2,4,6-Trichlorophenol (88-05-2)	X			<0.0104	<0.368					1	mg/l	kg/d							

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)	X			<0.0104	<0.368					1	mg/l	kg/d			
2B. Acenaphthylene (208-96-8)	X			<0.0104	<0.368					1	mg/l	kg/d			
3B. Anthracene (120-12-7)	X			<0.0104	<0.368					1	mg/l	kg/d			
4B. Benzdine (92-87-5)	X			<0.0104	<0.368					1	mg/l	kg/d			
5B. Benzo (a) Anthracene (56-55-3)	X			<0.0104	<0.368					1	mg/l	kg/d			
6B. Benzo (a) Pyrene (50-32-8)	X			<0.0104	<0.368					1	mg/l	kg/d			
7B. 3,4-Benzo- fluoranthene (205-99-2)	X			<0.0104	<0.368					1	mg/l	kg/d			
8B. Benzo (ghi) Perylene (191-24-2)	X			<0.0104	<0.368					1	mg/l	kg/d			
9B. Benzo (k) Fluoranthene (207-08-9)	X			<0.0104	<0.368					1	mg/l	kg/d			
10B. Bis (2-Chloro- ethoxy) Methane (111-91-1)	X			<0.0104	<0.368					1	mg/l	kg/d			
11B. Bis (2-Chloro- ethyl) Ether (111-44-4)	X			<0.0104	<0.368					1	mg/l	kg/d			
12B. Bis (2- Chloroisopropyl) Ether (102-80-1)	X			<0.0104	<0.368					1	mg/l	kg/d			
13B. Bis (2-Ethyl- hexyl) Phthalate (117-81-7)	X			0.0306	1.084					1	mg/l	kg/d			
14B. 4-Bromophenyl Phenyl Ether (101-55-3)	X			<0.0104	<0.368					1	mg/l	kg/d			
15B. Butyl Benzyl Phthalate (85-68-7)	X			<0.0104	<0.368					1	mg/l	kg/d			
16B. 2-Chloro- naphthalene (91-58-7)	X			<0.0104	<0.368					1	mg/l	kg/d			
17B. 4-Chloro- phenyl Phenyl Ether (7005-72-3)	X			<0.0104	<0.368					1	mg/l	kg/d			
18B. Chrysene (218-01-9)	X			<0.0104	<0.368					1	mg/l	kg/d			
19B. Dibenzo (a,h) Anthracene (53-70-3)	X			<0.0104	<0.368					1	mg/l	kg/d			
20B. 1,2-Dichloro- benzene (95-50-1)	X			<5	<0.177					1	ug/l	kg/d			
21B. 1,3-Di-chloro- benzene (541-73-1)	X			<5	<0.177					1	ug/l	kg/d			

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)															
22B. 1,4-Dichlorobenzene (106-46-7)	X			<5	<0.177					1	ug/l	kg/l			
23B. 3,3-Dichlorobenzidine (91-94-1)	X			<0.0104	<0.368					1	mg/l	kg/l			
24B. Diethyl Phthalate (84-86-2)	X			<0.0104	<0.368					1	mg/l	kg/l			
25B. Dimethyl Phthalate (131-11-3)	X			<0.0104	<0.368					1	mg/l	kg/l			
26B. Di-N-Butyl Phthalate (84-74-2)	X			<0.0104	<0.368					1	mg/l	kg/l			
27B. 2,4-Dinitrotoluene (121-14-2)	X			<0.0104	<0.368					1	mg/l	kg/l			
28B. 2,6-Dinitrotoluene (606-20-2)	X			<0.0104	<0.368					1	mg/l	kg/l			
29B. Di-N-Octyl Phthalate (117-84-0)	X			<0.0104	<0.368					1	mg/l	kg/l			
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	X			<0.0083	<0.249					1	mg/l	kg/l			
31B. Fluoranthene (206-44-0)	X			<0.0104	<0.368					1	mg/l	kg/l			
32B. Fluorene (86-73-7)	X			<0.0104	<0.368					1	mg/l	kg/l			
33B. Hexachlorobenzene (118-74-1)	X			<0.0104	<0.368					1	mg/l	kg/l			
34B. Hexachlorobutadiene (87-68-3)	X			<0.0104	<0.368					1	mg/l	kg/l			
35B. Hexachlorocyclopentadiene (77-47-4)	X			<0.0104	<0.368					1	mg/l	kg/l			
36B Hexachloroethane (67-72-1)	X			<0.0104	<0.368					1	mg/l	kg/l			
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)	X			<0.0104	<0.368					1	mg/l	kg/l			
38B. Isophorone (78-59-1)	X			<0.0104	<0.368					1	mg/l	kg/l			
39B. Naphthalene (91-20-3)	X			<0.0104	<0.368					1	mg/l	kg/l			
40B. Nitrobenzene (98-95-3)	X			<0.0104	<0.368					1	mg/l	kg/l			
41B. N-Nitrosodimethylamine (62-75-9)	X			<0.0104	<0.368					1	mg/l	kg/l			
42B. N-Nitrosodi-N-Propylamine (621-64-7)	X			<0.0104	<0.368					1	mg/l	kg/l			



CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)																2. MARK "X"				3. EFFLUENT								4. UNITS			5. INTAKE (optional)			
																a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES				
																			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS					
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)																																		
43B. N-Nitro-sodiphenylamine (86-30-6)																X				<0.0104	<0.368						1	mg/l	kg/d					
44B. Phenanthrene (85-01-8)																X				<0.0104	<0.368						1	mg/l	kg/d					
45B. Pyrene (129-00-0)																X				<0.0104	<0.368						1	mg/l	kg/d					
46B. 1,2,4-Tri-chlorobenzene (120-82-1)																X				<0.0104	<0.368						1	mg/l	kg/d					
GC/MS FRACTION – PESTICIDES																																		
1P. Aldrin (309-00-2)																X				<0.000514	<0.018						1	mg/l	kg/d					
2P. α-BHC (319-84-6)																X				<0.000514	<0.018						1	mg/l	kg/d					
3P. β-BHC (319-85-7)																X				<0.000514	<0.018						1	mg/l	kg/d					
4P. γ-BHC (58-89-9)																X				<0.000514	<0.018						1	mg/l	kg/d					
5P. δ-BHC (319-86-8)																X				<0.000514	<0.018						1	mg/l	kg/d					
6P. Chlordane (57-74-9)																X				<0.00514	<0.182						1	mg/l	kg/d					
7P. 4,4'-DDT (50-29-3)																X				<0.000514	<0.018						1	mg/l	kg/d					
8P. 4,4'-DDE (72-55-9)																X				<0.000514	<0.018						1	mg/l	kg/d					
9P. 4,4'-DDD (72-54-8)																X				<0.000514	<0.018						1	mg/l	kg/d					
10P. Dieldrin (60-57-1)																X				<0.000514	<0.018						1	mg/l	kg/d					
11P. α-Endosulfan (115-29-7)																X				<0.000514	<0.018						1	mg/l	kg/d					
12P. β-Endosulfan (115-29-7)																X				<0.000514	<0.018						1	mg/l	kg/d					
13P. Endosulfan Sulfate (1031-07-8)																X				<0.000514	<0.018						1	mg/l	kg/d					
14P. Endrin (72-20-8)																X				<0.000514	<0.018						1	mg/l	kg/d					
15P. Endrin Aldehyde (7421-93-4)																X				<0.000514	<0.018						1	mg/l	kg/d					
16P. Heptachlor (76-44-8)																X				<0.000514	<0.018						1	mg/l	kg/d					

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
VAD003113602	003

CONTINUED FROM PAGE V-8

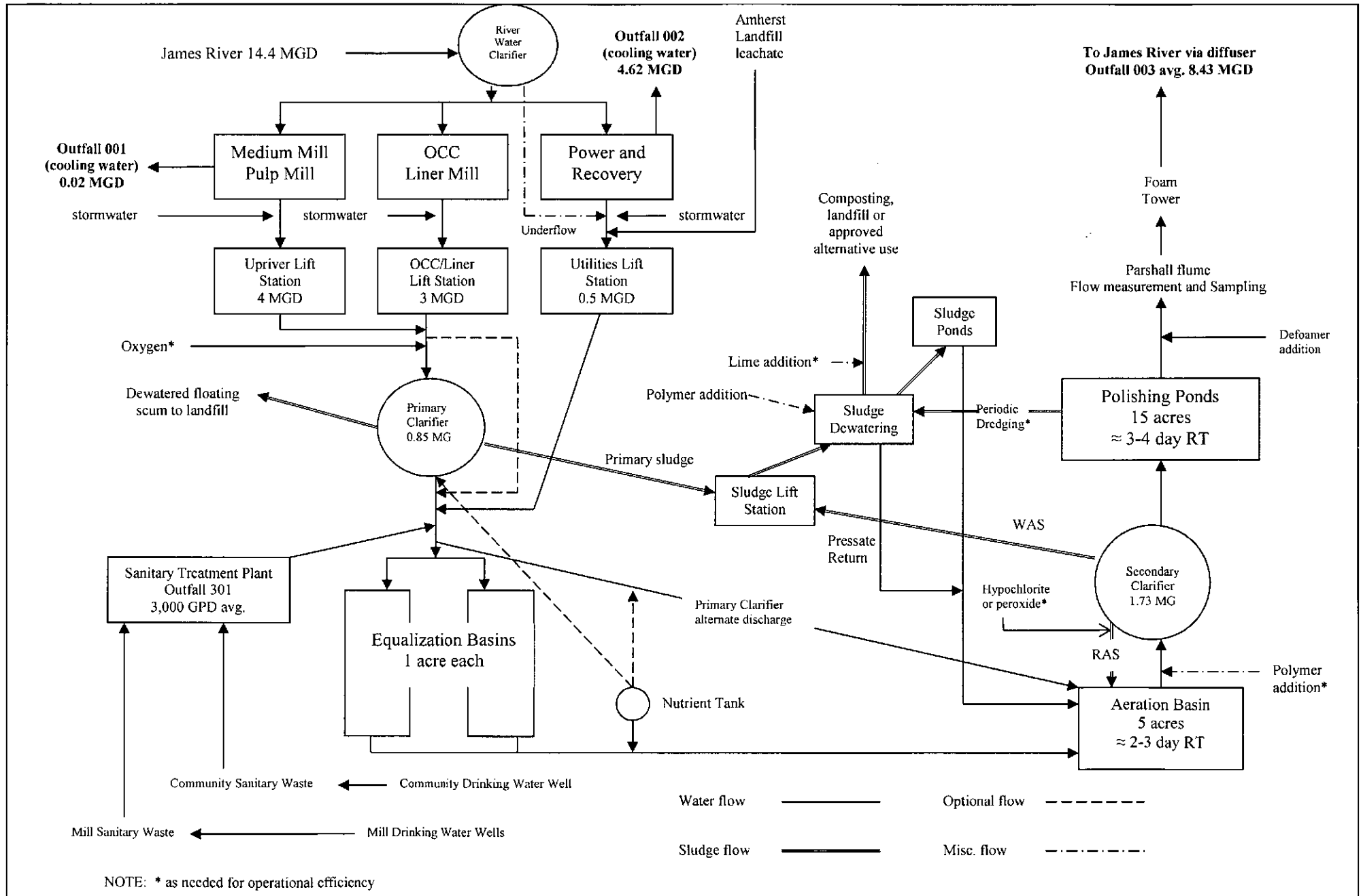
1. POLLUTANT AND CAS NUMBER <i>(if available)</i>	2. MARK "X"			3. EFFLUENT								4. UNITS		5. INTAKE <i>(optional)</i>		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE <i>(if available)</i>		c. LONG TERM AVRG. VALUE <i>(if available)</i>		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES	
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
GC/MS FRACTION – PESTICIDES <i>(continued)</i>																
17P. Heptachlor Epoxide (1024-57-3)	X			<0.000514	<0.018					1	mg/l	kg/d				
18P. PCB-1242 (53469-21-9)	X			<0.000514	<0.018					1	mg/l	kg/d				
19P. PCB-1254 (11097-69-1)	X			<0.000514	<0.018					1	mg/l	kg/d				
20P. PCB-1221 (11104-28-2)	X			<0.000514	<0.018					1	mg/l	kg/d				
21P. PCB-1232 (11141-16-5)	X			<0.000514	<0.018					1	mg/l	kg/d				
22P. PCB-1248 (12672-29-6)	X			<0.000514	<0.018					1	mg/l	kg/d				
23P. PCB-1260 (11096-82-5)	X			<0.000514	<0.018					1	mg/l	kg/d				
24P. PCB-1016 (12674-11-2)	X			<0.000514	<0.018					1	mg/l	kg/d				
25P. Toxaphene (8001-35-2)	X			<0.00514	<0.182					1	mg/l	kg/d				

EPA Form 3510-2C (8-90)

PAGE V-9

J - Result is less than the PQL but greater than the MDL and the reported result is an estimate.

**Attachment A to Form 2C**  
**GP Big Island, LLC**  
**Water Flow Diagram**





**Attachment B to Form 2C**  
**Process Materials Listed in Table 2C-4**  
**GP Big Island, LLC**  
**VPDES Permit No. VA0003026**

Chemical	Location	Tank Capacity, Gallons	Treatment Provided
Sodium Hydroxide 50%	Utilities	38,730	In all cases of spills of these materials, materials will be recovered from containment or routed to the wastewater treatment system for complete treatment as appropriate. Aluminum sulfate is a commonly used coagulant that will primarily coagulate with primary solids and be removed in the primary clarifier. Sodium hydroxide is used occasionally to adjust pH going to the primary clarifier as well as its process use, and thus, is beneficial. Sodium hypochlorite is an oxidizer that will be treated by neutralizing other substances. Diesel, gasoline, kerosene, lube oils and hydraulic oils are fully treatable and removed in the extended aeration biological treatment process.
Sodium Hydroxide 50%	Linermill/OCC plant	13,535	
Sodium Hypochlorite 12.5%	Linermill/OCC plant	2,000	
Aluminum Sulfate	Water Treatment	8,000	
Aluminum Sulfate	Linermill/OCC plant	13,535	
Diesel	Woodyard	4,000	
Gasoline	Woodyard	1,000	
Lubrication oils	Various mill locations	5,000	
Hydraulic oils	Various mill locations	1,000	
Kerosene	Woodyard, Linermill/OCC plant	550	

**ATTACHMENT C TO FORM 2C**  
**PROCESS OPERATIONS CONTRIBUTING WASTEWATER**  
**GP BIG ISLAND, LLC**  
**VPDES Permit No. VA0003026**

The GP Big Island, LLC facility falls within SIC codes 2631 and 2611, and produces unbleached, corrugating medium and linerboard from hardwood pulp and pre-and post-consumer recycled fiber.

**1.1. CHIP HANDLING OPERATIONS**

Chip Handling operations at the Big Island Mill receive, prepare, and convey wood chips to the Pulp Mill as the beginning step in the pulp production process. Hardwood chips from species of oak, poplar, maple, and gum are received by truck from off-site chipping facilities. These chips are unloaded using trailer dumpers and conveyed to a chip pile, reclaimed and screened. The screening operation separates the chips into oversize, accepts and fines. Accepted chips are transported to the Pulp Mill, while oversized chips are further processed and then re-screened. Fines from screening are transported to the Refuse Handling System.

**1.2. VIRGIN PULP MILL**

Process operations in the Pulp Mill begin with delivery of the hardwood chips from the Chip Handling operations. This area is comprised of the production, washing, and preparation of pulp that is sent to the Medium Mill for paper production.

**1.2.1. Conveying**

Hardwood chips are transported to the Pulp Mill using covered belt conveyors. The chips are distributed into one of five parallel chip bins for storage, before being transported by an enclosed bucket elevator and belt conveyor to five parallel chip hoppers, and conveyed through chutes to the digester screw feeders.

**1.2.2. Pulping**

The Pulp Mill operates four, Pandia 24-inch diameter continuous digester units. Chips are cooked in the digesters with finished liquor (a solution of sodium carbonate and sodium hydroxide), with heat and pressure provided by steam. After cooking, pulp from the digesters passes through a blow line defibrator to a common blow tank. Pulp is diluted in the blow tank with washer filtrate prior to being pumped to the stock storage chest. From the stock storage chest, pulp is pumped to the pulp washers.

**1.2.3. Pulp Washing**

The pulp brownstock washer system consists of two parallel, three-stage vacuum drum washing lines, with three associated filtrate tanks and two vacuum pumps. The washers are typically operated with counter-current washing, with filtrate from the second and third stages used as wash water in the preceding stage.

**ATTACHMENT C TO FORM 2C**  
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**GP BIG ISLAND, LLC**  
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Vacuum seal water is applied to the third stage, with fresh water used as make-up when the seal water supply is low. Heat recovered from digester blow gases is used to heat vacuum pump seal water and cooking liquor. Washer filtrate from the first washing stage typically consists of seven to nine percent black liquor solids. This filtrate, commonly referred to as weak black liquor (WBL), is pumped to the black liquor surge tank, located in the Chemical Recovery process area.

As part of an approved project that will be implemented during 2014 and 2015, the existing washers (2), filtrate tanks (3), and vacuum pumps (2) will be replaced with a new "Chemi-Washer" five-stage displacement pulp washer and filtrate tank. Vacuum seal water will be utilized as wash water, with fresh water used as makeup when the seal water supply is low.

**1.2.4. Stock Preparation**

After brownstock washing, pulp is dewatered using a screen and stored in chests prior to utilization on No. 1 and No. 3 Paper Machines. The pulp passes through primary and secondary refiners and then to a machine chest in which recovered fiber from the paper-making process (broke) is reincorporated into the paper machine feed stock. Fiber from the recycle fiber facility and double lined Kraft (DLK) pulper is added to improve the paper quality on the No. 1 and No. 3 Paper Machines. The blended pulp passes through three stages of centrifugal cleaners before it is sent to the No. 1 and No. 3 Paper Machines. Rejects from the three stage cleaners pass through the rejects refiner and are returned to the fiber line at the broke chest.

**1.3. MEDIUM MILL**

The Nos. 1 and 3 Paper Machines in the Medium Mill produce corrugating medium from semichemical pulp produced in the Pulp Mill and recycled fiber produced at the Linermill/Old Corrugated Container (OCC) plant or Double Line Kraft clippings (DLK) pulper.

Stock is diluted, screened, passed through centrifugal cleaners, and pumped to the paper machine headbox, where the stock is evenly distributed across the forming wire. The water in the paper stock is removed by gravity drainage in the "wet end", mechanical pressing in the "press section", and evaporation in the "dryer section." The dryer cans are heated with 200 pounds per square inch (psi) steam. The paper is dried to 10% moisture content and wound on a reel. The reel of paper is slit and rewound to rolls sized for delivery to the customer.

Defoamer, wet strength, and rewetter may be added to the stock prior to the paper machine headbox. Biocides and slimicides may be added as needed to the whitewater to control microbial growth on the paper machine. Cleaning chemicals are used on a



**ATTACHMENT C TO FORM 2C**  
**PROCESS OPERATIONS CONTRIBUTING WASTEWATER**  
**GP BIG ISLAND, LLC**  
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batch and continuous basis to keep pitch, inorganic deposits, and other sticky deposits from forming on paper machine wires and felts.

Paper trimmings and off-specification product are returned to the stock system for reprocessing at the broke chest. Paper machine whitewater is reused as dilution water as needed in various Medium Mill and Pulp Mill tanks, including the blow tank, machine chest, and high density storage tank. The remaining whitewater is screened using a disc thickener saveall for fiber recovery before discharge to the wastewater treatment system.

#### **1.4. CHEMICAL RECOVERY**

An essential part of the pulping process is the recovery of chemicals for reuse. The Mill processes black liquor for chemical recovery through a chemical recovery furnace.

##### **1.4.1. Black Liquor**

Weak black liquor (WBL) from the Pulp Mill is received in the WBL surge tank. From the surge tank, WBL can be sent to the WBL storage tank farm or to the evaporators. The WBL tank farm consists of one, 540,000-gallon storage tank and two, 900,000-gallon tanks. WBL is passed through a two-effect blow heat evaporator (BHE) for concentration. The liquor is further concentrated to approximately 60% black liquor solids (BLS) in a six-effect falling film evaporator and high solids concentrator set, also known as the multi-effect evaporator (MEE). Concentrated liquor is referred to as strong black liquor (SBL).

##### **1.4.2. Chemical Recovery Furnace**

SBL is fired in the recovery furnace to recover sodium carbonate from black liquor. The recovery furnace is designed to combust 200 tons of BLS per day. Black liquor is introduced into the recovery furnace via steam-atomized liquor guns.

##### **1.4.3. Finished Liquor**

The sodium carbonate smelt from the recovery furnace flows into a smelt dissolving tank. Evaporator condensate is added to the smelt in the dissolving tank to generate green liquor. The green liquor is clarified to remove dregs (*i.e.*, insoluble materials). The clarifier underflow is sewered.

Storage tanks for sodium carbonate, sodium hydroxide, and evaporator condensate store chemicals that are added to green liquor to increase the caustic and carbonate concentrations to that of finished cooking liquor. Sodium hydroxide is received by rail or truck, typically as a 50% solution. Sodium carbonate is received by rail or truck as a solid and made up to strength with

**ATTACHMENT C TO FORM 2C**  
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**GP BIG ISLAND, LLC**  
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evaporator condensates then stored for use as make-up in the Trim Tank. Finished liquor is stored and sent to the Pulp Mill.

**1.5. LINERBOARD MILL**

The Linerboard and OCC facility at the Big Island Mill was constructed in 1995 for the manufacturing of linerboard from recycled fiber extracted from old corrugated containers and DLK.

The Linerboard Mill consists of the recycled fiber facility, No. 4 Paper Machine, and various support activities. The recycled fiber facility pulps recycled paper, cleans the pulp of impurities and contaminants, and stores the stock for use in making linerboard and corrugating medium. Baled OCC and mixed office paper are delivered by truck and rail and stored on an outdoor pad adjacent to the Mill. The OCC bales are re-pulped in a hydropulper by mixing the paper with hot water and additives. Some heavy impurities are removed in the hydropulper. Recycled pulp is further cleansed by passing through several series of centrifugal cleaners and screens. The cleaned paper stock is thickened and stored for use on the Nos. 1, 3, and 4 Paper Machines.

Impurities from the recycled pulp, referred to as OCC rejects, are dewatered in a mechanical press and conveyed to a bunker for accumulation. The OCC rejects are transported to the refuse pile for use as fuel for the No. 5 Boiler or landfilled.

The No. 4 Paper Machine produces linerboard or medium using 100% recycled fiber. The recycled pulp is diluted, mechanically refined, and pumped to the headboxes of the paper machine where the paper stock is evenly distributed across the forming wire. The water in the paper stock is removed by gravity drainage in the "wet end," mechanical pressing in the "press section," and evaporated in the "dryer section." The paper is dried to approximately 10% moisture and wound on a reel, which is slit and rewound onto smaller rolls per customer specifications for shipping by rail or truck.

Specific chemicals are added to the No. 4 Paper Machine whitewater and paper stock prior to the headbox to enhance strength and other paper properties, and to control pH, foam, and microorganism growth in the whitewater. Dye may be added to the paper stock per customer specifications. Cleaning chemicals are utilized to minimize formation of polyvinyl acetate and other sticky deposits on the paper machine wires and felt rolls.

**1.6. POWER HOUSE AND UTILITIES**

The Big Island Mill operates three steam generating units to provide steam, power, and process water to the pulp and paper manufacturing process. A secondary function of the boilers is the combustion of non-condensable gases from the pulp production process, which are routed to the Nos. 5 and 7 Boilers for destruction.

**ATTACHMENT C TO FORM 2C**  
**PROCESS OPERATIONS CONTRIBUTING WASTEWATER**  
**GP BIG ISLAND, LLC**  
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The No. 5 Boiler is rated at up to 339 MMBtu/hr when firing a mixture of fuels, including wood, OCC rejects, and natural gas. The No. 5 Boiler employs a multicyclone and electrostatic precipitator for control of particulate matter emissions.

The No. 6 Boiler has a heat input capacity of 284.9 MMBtu/hr, is fired by natural gas, and employs integral low-NO<sub>x</sub> burners and flue gas recirculation to control nitrogen oxides (NO<sub>x</sub>) emissions. The No. 7 Boiler has a heat input capacity of 276 MMBtu/hr, is fired by natural gas, and employs integral low-NO<sub>x</sub> burners and flue gas recirculation to control NO<sub>x</sub> emissions.

**1.7. WASTEWATER TREATMENT**

The Mill processes industrial wastewater, stormwater and sanitary wastewater.

**1.7.1. Sanitary Wastewater Treatment**

The Big Island Mill treats sanitary wastewater from the paper mill and some of the Big Island community in an activated sludge package plant located adjacent to the equalization basins. Treated sanitary wastewater is discharged to the industrial wastewater treatment system prior to the activated sludge basin. Periodically, sludge solids from the sanitary treatment system may be removed by a vacuum truck operated by a licensed contractor and hauled to a Publicly Owned Treatment Works (POTW) for further processing.

**1.7.2. Industrial Wastewater Treatment**

The Mill operates an on-site activated sludge wastewater treatment facility to treat process wastewater. Wastewater is collected at one of three lift stations. Sodium hydroxide may be added to the untreated wastewater to raise the pH prior to the primary clarifier. Oxygen may be added to the effluent from the No.4 Lift station effluent as needed to control potential odor in the primary clarifier. The primary clarifier removes solids from paper machine and pulp mill effluent. Primary sludge is typically pumped to the sludge tanks. Primary sludge may also be returned to the Linerboard Mill for reprocessing, or dewatering via the OCC rejects screw press. Nutrients, such as phosphorus and nitrogen, are added to the wastewater after primary clarification as needed to facilitate biological degradation. Wastewater from the primary clarifier flows to the aeration basin by one of two routes: through the two, 1-acre equalization basins, or directly to the aeration basin.

Wastewater undergoes biological treatment in the aeration basin. The number of aerators in operation is based on maintaining a minimum dissolved oxygen of at least 1 milligram per liter (mg/L) in the aeration basin. A lift station pumps wastewater from the aeration basin to the secondary clarifier, in which the



**ATTACHMENT C TO FORM 2C**  
**PROCESS OPERATIONS CONTRIBUTING WASTEWATER**  
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biological solids are allowed to settle. A majority of the solids in the clarifier underflow are returned to the aeration basin. The remaining waste secondary sludge is sent to the sludge tanks. Clarified wastewater is discharged to the polishing pond. The polishing pond discharges treated wastewater to a parshall flume for flow measurement. Treated effluent is sampled with a composite sampler at this point (Outfall 003) and then discharged to a foam-control tower before release to the James River via a diffuser or a side-entering pipe used when high river flows occur.

Wastewater sludge from the primary clarifier and secondary clarifier is pumped to two sludge tanks. Combined primary and secondary sludge is then dewatered using a belt press. Polymer is added to the sludge prior to the belt press to assist with dewatering. Sludge press filtrate is pumped back to the aeration basin. Dewatered sludge is combined with lime on an as-needed basis for better handling characteristics when sludge is landfilled. Lime is received in granular form and conveyed pneumatically to a 50-ton silo. Dewatered sludge may be landfilled, composted or land-applied.

Sludge may occasionally be removed from the polishing pond, equalization basins and aeration basin as regularly scheduled maintenance. Sludge solids will be either disposed of in the landfill or beneficially reused. Additionally, in the event of maintenance of the sludge press, the facility maintains two emergency sludge basins for sludge dewatering. Sludge solids removed from these basins may be disposed of or otherwise handled in the same manner as any other sludge solids.

The Mill wastewater and stormwater falling in the process areas of the Mill are collected in various sewers and flow by gravity to the wastewater treatment system. In addition to the normal process and non-process wastewaters collected, the Mill may discharge wastewaters resulting from essential maintenance and regularly scheduled maintenance, during startup and shutdown conditions, and from incidental spills and releases (whether anticipated or unanticipated) from anywhere in the permitted facility. The primary materials that may reach the wastewater treatment system from these activities are described in Tables 3-1 and 3-2 following this attachment. These wastewaters are amenable to treatment as provided in the wastewater treatment system, and do not impact effluent limitations.

It may be necessary at times to take each clarifier off line for several days for periodic inspection and maintenance, or to take the aeration basin power off-line for several hours for electrical maintenance. Since the system will be operated such that adequate treatment is provided and effluent limitations are not exceeded, these maintenance activities are not considered bypass events.

**ATTACHMENT C TO FORM 2C**  
**PROCESS OPERATIONS CONTRIBUTING WASTEWATER**  
GP BIG ISLAND, LLC  
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**1.8. LANDFILL**

The Mill transports on-site wastes to its captive industrial landfill located across the James River in Amherst County. Waste materials include wastewater sludge, fly and bottom ash, OCC rejects, non-putrescible mill trash and any other materials defined in the solid waste permit. Waste materials are transferred from transport vehicles and spread, compacted, and covered. Leachate and stormwater that falls within the solid waste management area are collected and sent to the wastewater treatment system.



**Attachment D to Form 2C**  
**Treatment Unit Capacities**  
GP Big Island, LLC  
VPDES Permit No. VA0003026

Average Flow Rate ( $Q_{AVG}$ ): 8.43 MGD

Design Flow Rate: 10.87 MGD

**PRIMARY CLARIFIER**

Number: 1  
Diameter: 110 feet  
Sidewall Depth: 12 feet  
Storage Capacity: 0.85 MG

**EQUALIZATION BASINS**

Number: 2  
Average Depth (per basin): 10.5 feet  
Surface Area (per basin): 1 acre  
Storage Capacity (per basin): 3.42 MG  
Detention Time (both basins): 0.87 day at  $Q_{AVG}$

**AERATION BASIN**

Number: 1  
Average Depth: 12 feet  
Surface Area: 5 acres  
Storage Capacity: 19.5 MG  
Detention Time: 2.48 days at  $Q_{AVG}$

**SECONDARY CLARIFIER**

Number: 1  
Diameter: 140 feet  
Sidewall Depth: 15 feet  
Storage Capacity: 1.73 MG

**POLISHING POND**

Number: 1  
Average Depth: 6 feet  
Surface Area: 15 acres  
Storage Capacity: 29.3 MG  
Detention Time: 3.73 days at  $Q_{AVG}$

**SLUDGE DEWATERING SYSTEM**

(2) 100,000 gallon sludge holding/decant tanks  
(1) polymer dilution system  
(2) sludge feed pumps  
(1) comminutor  
(1) 2-meter belt filter press

**SLUDGE DEWATERING LAGOONS**

Number: 2  
Average Depth: 6 feet  
Surface Area (total): 6.5 acres  
Storage Capacity (total): 12.7 MG

### TOXICITY TEST DATA


Chronic Toxicity Test Results for GP Big Island, LLC  
VPDES Permit No. VA0003026, Outfall 003

Test Date	Test Organism	TU <sub>c</sub>	NOEC Survival	NOEC Growth/	LC <sub>50</sub>
			(%)	Reproduction (%)	
May '11 (R)	<u>C. dubia</u>	1.0	100	100	>100
	<u>P. promelas</u>	1.0	100	100	>100
May '12 (R)	<u>C. dubia</u>	1.0	100	100	>100
	<u>P. promelas</u>	1.0	100	100	>100
May '13 (R)	<u>C. dubia</u>	1.0	100	100	>100
	<u>P. promelas</u>	1.0	100	100	>100
May '14 (R)	<u>C. dubia</u>	1.0	100	100	>100
	<u>P. promelas</u>	1.0	100	100	>100

R= testing by REI Consultants, Beaver, WV



[illegible]

<b>FORM</b> <b>2F</b> NPDES		<div style="text-align: right;">           U.S. Environmental Protection Agency            Washington, DC 20460         </div> <div style="text-align: center;"> <b>Application for Permit to Discharge Storm Water</b>  <b>Discharges Associated with Industrial Activity</b> </div>
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**Paperwork Reduction Act Notice**

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information, or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

### I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number (#st)	B. Latitude			C. Longitude			D. Receiving Water (name)
018	37	31	28	79	21	03	Reed Creek to James River
021	37	32	12	79	21	29	James River
022	37	32	30	79	20	57	Unnamed tributary to James River
023	37	32	31	79	20	39	Unnamed tributary to Thomas Mill Creek
025	37	31	58	79	21	09	James River
028	37	32	20	79	20	55	Unnamed tributary to James River

## II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

[illegible]

B: You may attach additional sheets describing any additional water pollution (or other environmental) projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.

### III. Site Drainage Map

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfalls(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage of disposal of significant materials, each existing structural control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which received storm water discharges from the facility.

See Appendix 1 (Tab 6)

See Appendix 1 (Tab 6)



Continued from the Front

**IV. Narrative Description of Pollutant Sources**

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
	See Attachment A (Tab 7)				

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water, method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas, and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

See Appendix 2 (Tab 9)

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
	See Attachment A (Tab 7)	

**V. Nonstormwater Discharges**

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharged from these outfall(s) are identified in either an accompanying Form 2C or Form 2E application for the outfall.

Name and Official Title (type or print)	Signature	Date Signed
Eldon G. Brammer - Vice Pres. Manuf.	<i>Eldon Brammer</i>	9/30/14

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

Storm water outfalls are identified and evaluated in annual site compliance evaluations.

**VI. Significant Leaks or Spills**

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

See Attachment B (Tab 8)

**VII. Discharge Information**

A, B, C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided.  
Table VII-A, VII-B, VII-C are included on separate sheets numbers VII-1 and VII-2.

E. Potential discharges not covered by analysis – is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☒ Yes (list all such pollutants below)

☐ No (go to Section IX)

Color: contained in black liquor byproduct

Surfactants: cleaners

**VIII. Biological Toxicity Testing Data**

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ Yes (list all such pollutants below)

☐ No (go to Section IX)

See biological monitoring data presented in Attachment E (Tab 4) as required by Part VII of Form 2C.

**IX. Contract Analysis Information**

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

☒ Yes (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ No (go to Section X)

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Environmental Systems Service, Ltd.	218 North Main Street PO Box 520 Culpeper, VA 22701	(540) 825-6660	Pollutants listed in VII.A.
Air, Water & Soil Laboratories, Inc.	2109A North Hamilton Street Richmond, VA 23230	(804) 358-8295	COD, TKN, iron, zinc, nitrate/nitrite, copper
REI Consultants, Inc.	P.O. Box 286 Beaver, WV 25813	(304) 255-2500	copper, zinc

**X. Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title (Type Or Print)

Eldon G. Brammer - Vice President Manufacturing

B. Area Code and Phone No.

(434) 299-5911

C. Signature

*Eldon Brammer*

D. Date Signed

9/30/14

**VII. Discharge information (Continued from page 3 of Form 2F)**

**Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.**

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Outfall 555  Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	<5.00 mg/l	N/A	<5.00 mg/l	N/A	1	Outfall 007 sampled
Biological Oxygen Demand (BOD5)	6 mg/l	8 mg/l	3 mg/l	8 mg/l	3	Outfalls 007 and 013 sampled
Chemical Oxygen Demand (COD)	26 mg/l	<10 mg/l	26 mg/l	<10 mg/l	1	Outfall 007 sampled
Total Suspended Solids (TSS)	41 mg/l	2 mg/l	25 mg/l	2 mg/l	3	Outfalls 007 and 013 sampled
Total Nitrogen	1.03 mg/l	0.098 mg/l	1.03 mg/l	0.098 mg/l	1	Outfall 007 sampled
Total Phosphorus	0.06 mg/l	<0.05 mg/l	0.06 mg/l	<0.05 mg/l	1	Outfall 007 sampled
pH	Minimum 7.11	Maximum 7.50	Minimum 7.11	Maximum 7.50	2	Outfalls 007 and 013 sampled

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

[illegible]





Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
9/21/13	360	1.0	216		0.062 MG Outfall 013
7/3/14	60	1.6	168		0.021 MG Outfall 007
8/1/14	600	0.8	96	19 gal/min	0.010 MG Outfall 007

7. Provide a description of the method of flow measurement or estimate.

Flow rate from 8/1/14 event was estimated from Manning's equations using the slope and depth method.

Total flow from all rain events was estimated using the runoff coefficient method.

**Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.**

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Continue on Reverse



7. Provide a description of the method of flow measurement or estimate.

Flow rate from 7/3/14 event was estimated from Manning's equations using the slope and depth method.  
Total flow from the rain event was estimated using the runoff coefficient method.



**VII. Discharge information (Continued from page 3 of Form 2F)**

**Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.**

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Outfall 012  Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	<5.00 mg/l	N/A	<5.00 mg/l	N/A	1	
Biological Oxygen Demand (BOD5)	16 mg/l	14 mg/l	11 mg/l	14 mg/l	2	
Chemical Oxygen Demand (COD)	104 mg/l	62.2 mg/l	104 mg/l	62.2 mg/l	1	
Total Suspended Solids (TSS)	57.2 mg/l	12.1 mg/l	50 mg/l	12.1 mg/l	2	
Total Nitrogen	1.44 mg/l	2.7 mg/l	1.44 mg/l	2.7 mg/l	1	
Total Phosphorus	0.17 mg/l	0.13 mg/l	0.17 mg/l	0.13 mg/l	1	
pH	Minimum 6.80	Maximum 7.60	Minimum 6.80	Maximum 7.60	2	

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

[illegible]



**Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.**

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Continue on Reverse





Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B –	List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.
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EPA Form 3510-2F (1-92) Page VII-1 Continue on Reverse

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
9/21/13	360	1.0	216		0.333 MG
7/3/14	60	1.6	168	8040 gal/min	0.533 MG

7. Provide a description of the method of flow measurement or estimate.

Flow rate from 7/3/14 event was estimated from Manning's equations using the slope and depth method.

Total flow from both rain events was estimated using the runoff coefficient method.



Part A -- You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each puffall. See instructions for additional details.

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements

Continue on Reverse



**Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.**

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Outfall 018  Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	<5.00 mg/l	N/A	<5.00 mg/l	N/A	1	
Biological Oxygen Demand (BOD5)	5 mg/l	17 mg/l	2 mg/l	17 mg/l	3	
Chemical Oxygen Demand (COD)	28.8 mg/l	87.3 mg/l	28.8 mg/l	87.3 mg/l	1	
Total Suspended Solids (TSS)	129 mg/l	9.18 mg/l	88 mg/l	9.18 mg/l	2	
Total Nitrogen	0.73 mg/l	6.06 mg/l	0.73 mg/l	6.06 mg/l	1	
Total Phosphorus	0.10 mg/l	0.28 mg/l	0.10 mg/l	0.28 mg/l	1	
pH	Minimum 6.17	Maximum 8.10	Minimum 6.17	Maximum 8.10	2	

**Part B -** List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

[illegible]





**VII. Discharge information (Continued from page 3 of Form 2F)**

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Outfall 021  Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	<5.00 mg/l	N/A	<5.00 mg/l	N/A	1	
Biological Oxygen Demand (BOD5)	27 mg/l	19 mg/l	20 mg/l	19 mg/l	3	
Chemical Oxygen Demand (COD)	277 mg/l	59.4 mg/l	277 mg/l	59.4 mg/l	2	
Total Suspended Solids (TSS)	421 mg/l	12.2 mg/l	241 mg/l	12.2 mg/l	3	
Total Nitrogen	3.98 mg/l	1.16 mg/l	3.98 mg/l	1.16 mg/l	2	
Total Phosphorus	0.75 mg/l	0.12 mg/l	0.75 mg/l	0.12 mg/l	2	
pH	Minimum 7.31	Maximum 7.60	Minimum 7.31	Maximum 7.60	2	

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

[illegible]

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
9/21/13	360	1.0	216		0.006 MG
10/7/13	240	1.5	360		0.009 MG
3/2/14	1080	1.5	216		0.009 MG
5/28/14	60	0.3	312		0.002 MG
7/3/14	60	1.6	168	15 gal/min	0.010 MG
8/1/14	600	0.8	96	15 gal/min	0.005 MG

7. Provide a description of the method of flow measurement or estimate.

Flow rate from the 7/3/14 and 8/1/14 events were estimated from Manning's equations using the slope and depth method.

Total flow from all rain events was estimated using the runoff coefficient method.

**VII. Discharge information (Continued from page 3 of Form 2F)**

**Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.**

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Outfall 022  Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	<5.00 mg/l	N/A	<5.00 mg/l	N/A	1	
Biological Oxygen Demand (BOD5)	16 mg/l	4 mg/l	16 mg/l	4 mg/l	1	
Chemical Oxygen Demand (COD)	23.2 mg/l	31.6 mg/l	23.2 mg/l	31.6 mg/l	1	
Total Suspended Solids (TSS)	79.3 mg/l	14.4 mg/l	46.7 mg/l	14.4 mg/l	2	
Total Nitrogen	1.27 mg/l	0.64 mg/l	1.27 mg/l	0.64 mg/l	1	
Total Phosphorus	0.46 mg/l	0.09 mg/l	0.46 mg/l	0.09 mg/l	1	
pH	Minimum 6.84	Maximum 7.27	Minimum 6.84	Maximum 7.27	1	

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

[illegible]



Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/7/13	240	1.5	360		0.415 MG
7/3/14	60	1.6	168	5 gal/min	0.443 MG

7. Provide a description of the method of flow measurement or estimate.

Flow rate from 7/3/14 event was estimated from Manning's equations using the slope and depth method.

Total flow from both rain events was estimated using the runoff coefficient method.

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

EPA Form 3510-2F (1-92) Page VII-1 Continue on Reverse

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/7/13	240	1.5	360		0.060 MG
7/3/14	60	1.6	168	45 gal/min	0.064 MG

7. Provide a description of the method of flow measurement or estimate.

Flow rate from 7/3/14 event was estimated from Manning's equations using the slope and depth method.

Total flow from all rain events was estimated using the runoff coefficient method.

**VII. Discharge information (Continued from page 3 of Form 2F)**

**Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.**

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Outfall 025  Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease	10.00 mg/l	N/A	10.00 mg/l	N/A	1	
Biological Oxygen Demand (BOD5)	35 mg/l	<2 mg/l	35 mg/l	<2 mg/l	1	
Chemical Oxygen Demand (COD)	782 mg/l	23.2 mg/l	782 mg/l	23.2 mg/l	1	
Total Suspended Solids (TSS)	3080 mg/l	123 mg/l	1631 mg/l	123 mg/l	2	
Total Nitrogen	10.42 mg/l	0.85 mg/l	10.42 mg/l	0.85 mg/l	1	
Total Phosphorus	4.39 mg/l	0.16 mg/l	4.39 mg/l	0.16 mg/l	1	
pH	Minimum 7.43	Maximum 7.47	Minimum 7.43	Maximum 7.47	1	

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

[illegible]



Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
11/26/13	1320	2.7	192		1.241 MG
7/3/14	60	1.6	168	370 gal/min	0.735 MG

7. Provide a description of the method of flow measurement or estimate.

Flow rate for 7/3/14 event was estimated from Manning's equations using the slope and depth method.

Total flow from both rain events was estimated using the runoff coefficient method.

Part A -- You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

EPA Form 3510-2F (1-92) Page VII-1 Continue on Reverse

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
11/26/13	1320	2.7	192		0.303 MG
7/3/14	60	1.6	168	135 gal/min	0.180 MG

7. Provide a description of the method of flow measurement or estimate.

Flow rate from 7/3/14 event was estimated from Manning's equations using the slope and depth method.

Total flow from both rain events was estimated using the runoff coefficient method.

### **Similar Outfalls for Form 2F:**

The following outfalls are recommended for consideration as similar outfalls in our VPDES permit as Outfall 555:

Outfalls 007, 009 and 010 drain portions of the main road and parking areas.

Outfall 013 drains the truck scales, a portion of the main road and parking areas.

Outfall 014 drains the truck staging area near the truck scales, a portion of the main road and parking areas.



## Appendix 1: Site Maps

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### Potential Pollutant Sources Identified on Plan Sheets:

*(Corresponding numbers are on site map for locations.)*

- |  |           |
|--|-----------|
| 1. 2 - 1,000 gallon propane tanks                      | (Sheet 1) |
| 2. Outdoor secondary fiber storage                     | (Sheet 1) |
| 3. Rail Loading Dock                                   | (Sheet 1) |
| 4. Truck loading dock                                  | (Sheet 1) |
| 5. High density pulp tank                              | (Sheet 1) |
| 6. Ashland Presstige 9050 tank                         | (Sheet 1) |
| 8. Alum Tank   | (Sheet 1) |
| 9. Boiler condensate tank                              | (Sheet 1) |
| 10. Salt   | (Sheet 1) |
| 11. Sodium carbonate tanks                             | (Sheet 1) |
| 12. 50% Caustic tank                                   | (Sheet 1) |
| 13. Strong black liquor tank                           | (Sheet 1) |
| 14. Green Liquor tank                                  | (Sheet 1) |
| 15. Green/black liquor tank                            | (Sheet 1) |
| 16. White liquor tank                                  | (Sheet 1) |
| 17. Surge tank   | (Sheet 1) |
| 18. Lube Oil storage, unloading area, used oil storage | (Sheet 1) |
| 19. Liquor tank at recovery boiler                     | (Sheet 1) |
| 20. Liquor tank at recovery boiler                     | (Sheet 1) |
| 21. Liquor tank at recovery boiler                     | (Sheet 1) |
| 22. Ashland Prequel 500 tank                           | (Sheet 2) |
| 23. Woodwaste fuel/chip piles                          | (Sheet 1) |
| 24. Contractor/fabrication building                    | (Sheet 2) |

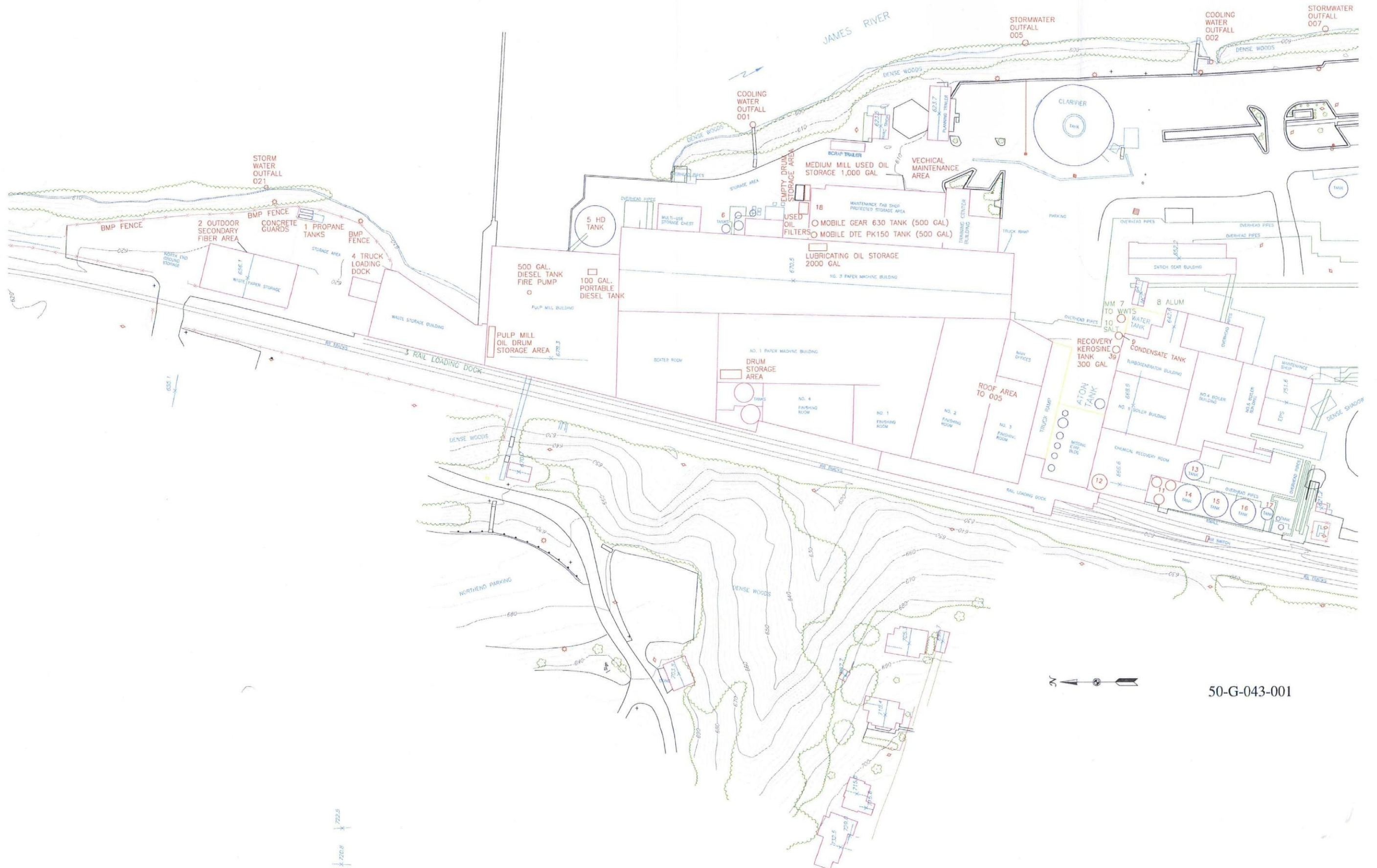
## Appendix 1: Site Maps

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25. OCC Pad addition	(Sheet 2)
26. Dump chest	(Sheet 2)
27. Alum	(Sheet 2)
28. Sizing Prequel 2000	(Sheet 2)
29. Sodium hydroxide 50%	(Sheet 2)
30. Starch	(Sheet 2)
31. HD chest	(Sheet 2)
32. Broke chest	(Sheet 2)
35. Hercobond tank	(Sheet 2)
36. LD chest	(Sheet 2)
38. Used oil tank	(Sheet 2)
39. Kerosene tank	(Sheet 2)
40. Gasoline tank	(Sheet 2)
41. Diesel tank	(Sheet 2)
42. Propane tank	(Sheet 2)
43. Nutrient tank	(Sheet 3)
46. Sanitary WWTP	(Sheet 3)
47. Propane tank	(Sheet 3)
49. Trailer storage	(Sheet 3)
50. Amherst landfill	(Sheet 4)
51. Haul road to Amherst landfill	(Sheet 2)
53. Sludge dewatering lagoons	(Sheet 5)
54. Lime storage tank	(Sheet 5)
55. Sludge storage tanks	(Sheet 5)

STORMWATER SITE MAP  
SHEET 1  
PULP MILL TO UTILITIES  
Revised 9-17-14

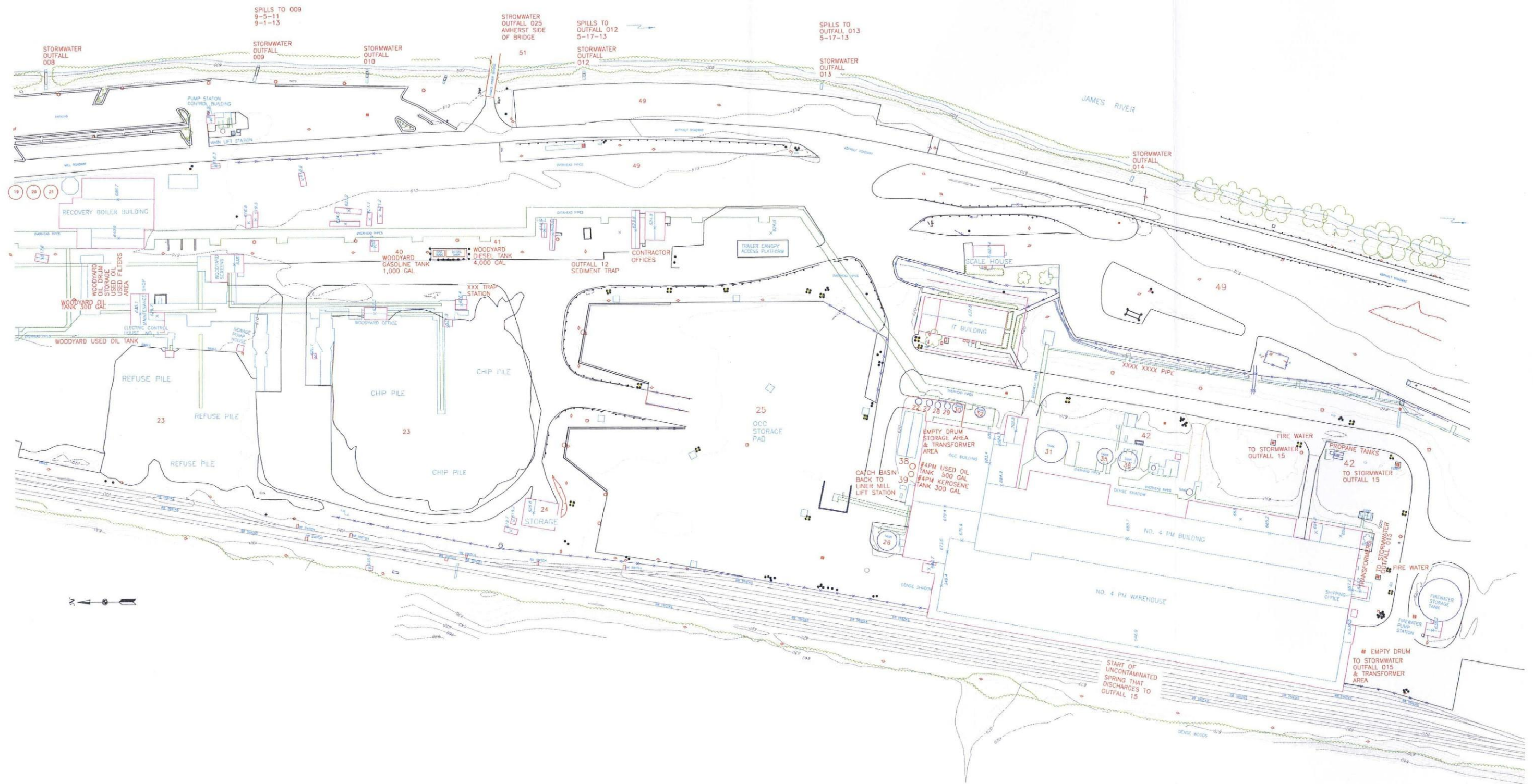
9-5-11  
SPILLS TO 007



50-G-043-001



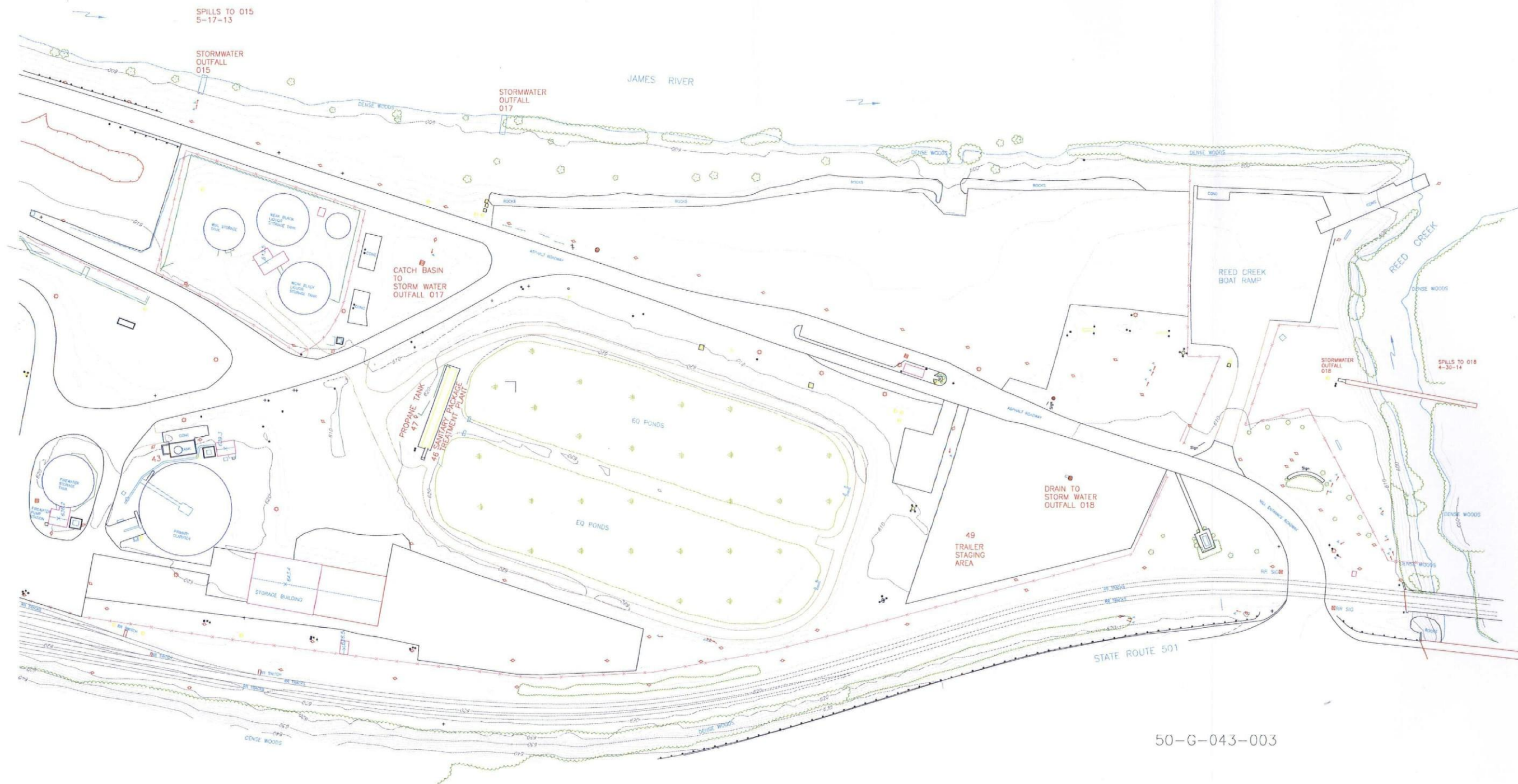
STORMWATER SITE MAP  
SHEET 2  
WOODYARD TO LINER MILL  
Revised 9-17-14



50-G-043-002



STORMWATER SITE MAP  
SHEET 3  
TANK FARM TO MILL ENTRANCE  
5-15-08 REVISED 12-8-08



50-G-043-003







STORMWATER SITE PLAN  
SHEET 5  
SLUDGE PRESS & SLUDGE PONDS

003 OUTFALL

JAMES RIVER

SLUDGE POND  
140,000 square feet

53

SLUDGE POND  
120,000 square ft

53

SLUDGE DEWATERING BUILDING

LIME SILO

DRY PUMP STATION

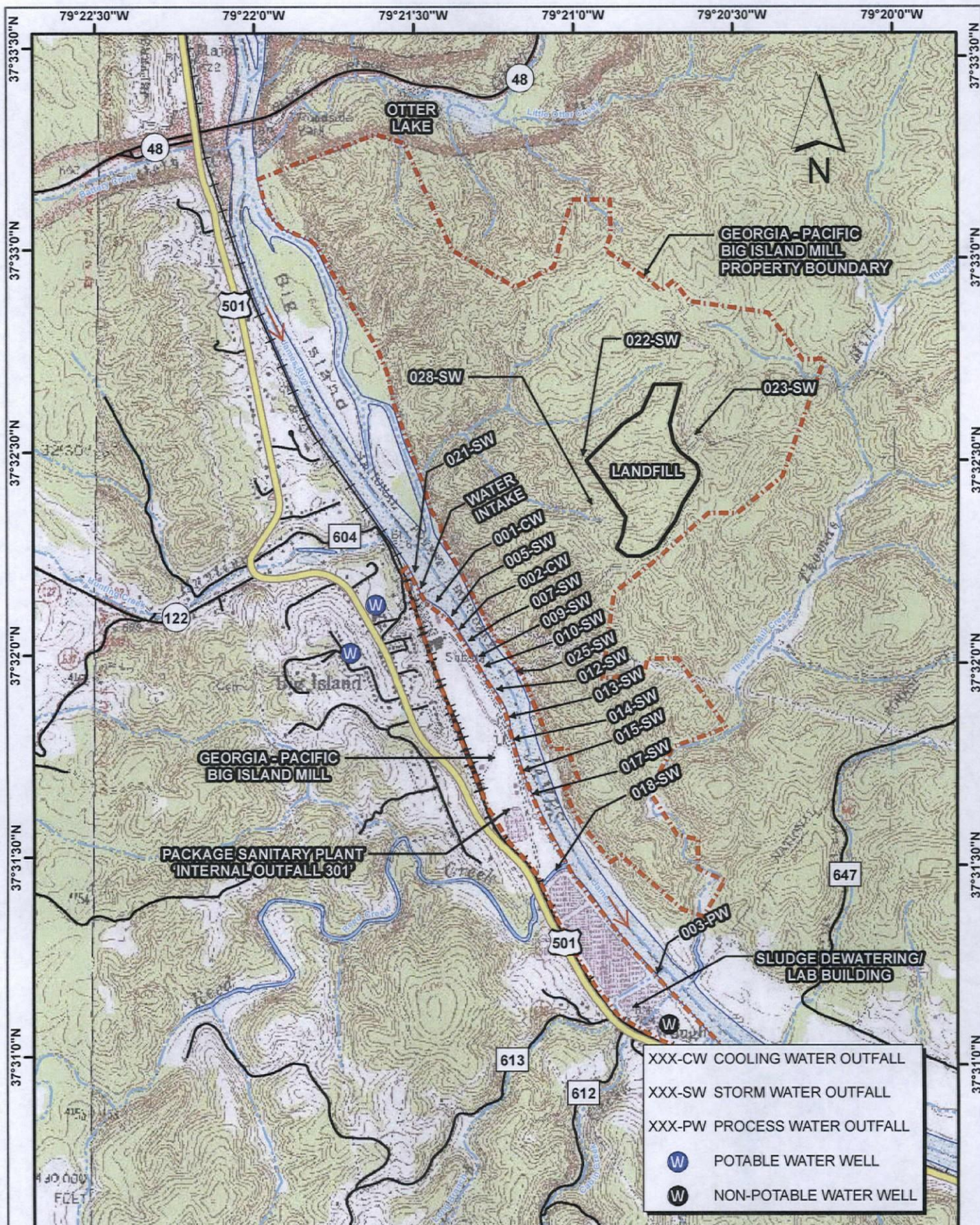
54

55

50-G-043-005

50-G-043-005





IF THIS DRAWING IS A REDUCTION  
GRAPHIC SCALE MUST BE USED

U.S. Geological Survey. 1:24,000. 7.5 Minute Series

2,000 0 2,000 Feet



**W**  
**W**  
**ASSOCIATES**

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www.wvaassociates.net

DRAWN BY: CLP

REVIEWED BY: HFW

FILE NAME:  
USGSMAP.mxd

PROJECT NUMBER:  
209078.00

PROJECT:

**GEORGIA - PACIFIC  
BIG ISLAND PAPER MILL**

TITLE:  
**FIGURE 1-1  
GP ~ OUTFALLS**

Scale:  
1" = 2,000 FT

Date:  
11/17/09

Figure:  
3 - 1



**Attachment A to Form 2F**  
**Drainage Areas and Control Measures**

OUTFALL	TOTAL DRAINED AREA		IMPERVIOUS SURFACE AREA RC = 0.9		LIGHT INDUSTRIAL SURFACE AREA RC = 0.5		LIGHT INDUSTRIAL SURFACE AREA RC = 0.7		ESTIMATED RUNOFF COEFFICIENT FOR TOTAL DRAINED AREA	STRUCTURAL AND NON-STRUCTURAL CONTROL MEASURES
	(sq. ft.)	(acres)	(sq. ft.)	(acres)	(sq. ft.)	(acres)	(sq. ft.)	(acres)		
005	12,807	0.294	12,807	0.294	0	0.000	0	0.000	0.9	Good Housekeeping & BMP/No structural controls
007	23,221	0.533	23,221	0.533	0	0.000	0	0.000	0.9	Good Housekeeping & BMP/No structural controls
008	N/A 100% off-site		N/A 100% off-site		N/A 100% off-site		N/A 100% off-site		N/A 100% off-site	N/A 100% off-site
009	60,073	1.379	60,073	1.379	0	0.000	0	0.000	0.9	Good Housekeeping & BMP/No structural controls
010	37,648	0.864	37,648	0.864	0	0.000	0	0.000	0.9	Good Housekeeping & BMP/No structural controls
012	308,515	7.083	0	0.000	0	0.000	308,515	7.083	0.7	Good Housekeeping & BMP/Sediment trap
013	109,850	2.522	109,850	2.522	0	0.000	0	0.000	0.9	Good Housekeeping & BMP/No structural controls
014	46,626	1.070	46,626	1.070	0	0.000	0	0.000	0.9	Good Housekeeping & BMP/No structural controls
015	693,833	15.928	468,803	10.762	225,030	5.166	0	0.000	0.77	Good Housekeeping & BMP/No structural controls
017	129,227	2.967	0	0.000	129,227	2.967	0	0.000	0.5	Good Housekeeping & BMP/No structural controls
018	120,152	2.758	46,868	1.076	73,284	1.682	0	0.000	0.66	Good Housekeeping & BMP/No structural controls
021	11,109	0.255	11,109	0.255	0	0.000	0	0.000	0.9	Good Housekeeping & BMP/Sediment trap
022	888,624	20.400	0	0.000	888,624	20.400	0	0.000	0.5	Good Housekeeping & BMP/Sediment pond
028	360,488	8.276	0	0.000	360,488	8.276	0	0.000	0.5	Good Housekeeping & BMP/Sediment pond

OUTFALL	TOTAL DRAINED AREA		UNIMPROVED W/ 7 - 15% SLOPES RC = 0.2		LAWN >40% CLAY FLAT SLOPES RC = 0.17		LAWN >40% CLAY STEEP SLOPES RC = 0.35		ESTIMATED RUNOFF COEFFICIENT FOR TOTAL DRAINED AREA	STRUCTURAL AND NON-STRUCTURAL CONTROL MEASURES
	(sq. ft.)	(acres)	(sq. ft.)	(acres)	(sq. ft.)	(acres)	(sq. ft.)	(acres)		
023	290,981	6.680	145,490	3.340	87,294	2.004	58,196	1.336	0.221	Good Housekeeping & BMP/No structural controls

OUTFALL	TOTAL DRAINED AREA		UNIMPROVED W/ 7 - 15% SLOPES RC = 0.2		UNIMPROVED W/ 25% SLOPES RC = 0.3				ESTIMATED RUNOFF COEFFICIENT FOR TOTAL DRAINED AREA	STRUCTURAL AND NON-STRUCTURAL CONTROL MEASURES
	(sq. ft.)	(acres)	(sq. ft.)	(acres)	(sq. ft.)	(acres)	(sq. ft.)	(acres)		
025	3,277,454	75.240	2,458,091	56.430	819,364	18.810	0	0.000	0.225	Good Housekeeping & BMP/No structural controls

Runoff coefficients are based on EPA's NPDES Storm Water Sampling Guidance Document; July 1992.

Outfall 025 slope estimates are based on the Soils Type Map in the Appendix of the Big Island Mill's Forest MAP Plan dated November 1, 2002.

Outfall 023 slope estimates are based on the topographic map of the drainage area.

Information on this sheet to satisfy Part IV(A) and Part IV(C) of Form 2F

## Attachment B to Form 2F, Section VI

Worksheet 1 List of Significant Spills and Leaks					Completed by: Tim Pierce Title: EHS Manager Revision Date: September, 2014					
Directions: Record below all significant spills and leaks of toxic or hazardous pollutants that have occurred at the facility in the last 3 years. Definitions: Significant spills include, but are not limited to, releases of oil or hazardous substances in excess of reportable quantities.										
Date (m/d/y)	Check One or Both		Location (as indicated on site map)	Type of Material	Quantity (Estimate)	Source	Reason	Amount of material Recovered	Is material still exposed to stormwater ?	Preventative measures taken *
	Spill	Leak								
9/5/2011	X		Outfall 007, 009	Comingled process and storm water	Unknown	Utilities Sewer	Heavy rains		No	Project to better isolate process water from storm water
5/7/2013	X		Outfall 012, 013, 015	Process water	30,000 gal	Liner Mill Sewers	Pumps were plugged		No	Unplugged pumps, improvements to PM's of pumps and procedures
9/1/2013	X		Outfall 009	Comingled process and storm water	Unknown	Utilities Sewer	Heavy rains		No	Checked and cleaned lift station
4/30/2014	X		Outfall 018	Comingled process and storm water	150 gal	Equalization Basin	Airlock in line		No	Cycled the outlet valve

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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### **Drainage**

Site maps have been updated and are attached in Appendix 1.

Sheets 1-3 have appropriate outfall numbers attached to the network of pipes that convey stormwater. Drainage boundary divisions on drawing number 50G0211 indicate a prediction of the direction of flow at the facility.

A list of potential pollutant sources identified on the site maps is included with the maps in Appendix 1. A more complete description of possible pollutants is included in the following Summary of Potential Pollutant Sources.

### **Inventory of Exposed Materials**

The following is a brief description of the types of materials handled at the site that may be exposed to stormwater:

The sawdust and chip piles are located south of the Power House. These piles cover approximately 3.5 acres. Runoff from the sawdust and chip piles discharges to the Mill wastewater treatment plant (WWTP). For most rainfall events, water is contained under the pile due to the slope of the ground under the sawdust. Bark and debris from the piles could be present in the stormwater runoff for large rainfall events. No chemicals are added or applied to the stored sawdust. There is a wood retaining wall that controls the possible runoff of sawdust between the sawdust pile and the maintenance shop. Any runoff that escapes the wall would be intercepted by Drop Inlet #2 and carried to the Utilities Lift Station. There is a potential for Outfall 009 to discharge overflow from the Utilities Lift Station and the



## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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woodyard when a high intensity storm event occurs.

The original Old Corrugated Container (OCC) pad, which was constructed with the OCC building project in 1996, drains stormwater runoff to the No. 4 (Linerboard Mill) Lift Station for conveyance to the WWTP. An addition to the OCC pad, built in the summer of 1998, is adjacent to, and south of, the chip pile and covers an area of approximately 2 acres. The stormwater from the OCC pad addition flows through a sediment trap to remove any floating debris before it reaches Outfall 012.

Secondary fiber, known as Double Lined Kraft (DLK) clippings, is used as a fiber source to supplement secondary fiber from the OCC operation for the medium machines. The DLK is received in bales via trucks and rail. The material is unloaded and stored at the north end of the plant. Stormwater from the rail unloading dock and the northern section of the outdoor storage area discharges to the river via sheet flow. Stormwater from the truck unloading dock and the southern section of the outdoor storage area flows to the river via Outfall 021. A sediment trap with a submerged, baffled discharge is provided to remove paper scraps from the stormwater runoff prior to entering Outfall 021. The area's scrap paper is routinely picked up to minimize debris (see attached BMP).

The Amherst landfill, shown on site maps in Appendix 1, is located east of the Mill and is currently in operation. Waste is hauled from the Mill in dump trucks. All precipitation that falls in open cells is captured and the leachate is conveyed and treated in the Mill WWTP. Sediment basins at the landfill are used to trap

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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sediment from stormwater runoff from areas adjacent to the landfill cells at Outfall 022 and Outfall 028. The sediment basins are cleaned as required to maintain storage capacity and sediment trapping capability.

### **Summary of Potential Pollutant Sources**

In this section, storage tanks, chemical unloading areas, storage piles, wastewater treatment systems, and piping are identified and discussed with regard to their potential to release regulated and/or hazardous materials. Material flow that would occur in the event of a catastrophic spill or failure has been identified. Finally, the impact of these spilled materials on the wastewater treatment system is discussed. A list of potential pollutant materials can be found in Appendix 1.

### **Process Chemical Unloading Areas**

There are five process areas of the Mill where process chemicals are unloaded (Recovery Plant, Medium Mill, Power House, Wastewater Treatment and Linerboard Mill). The means and location of delivery and specific steps taken to minimize spill potential during unloading operations are discussed in the following sections. Chemical unloading areas are summarized in Table 3-1.

#### **1. Chemical Rail Car Unloading - Recovery Area - (Sheet 1)**

Sodium carbonate, or soda ash, is received by rail as a powder. Soda ash is unloaded by means of dumping directly into a sluice pit. This is located within a diked area that drains to the wastewater treatment system. As soda ash unloading procedures require continuous operator attention,

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

potential spill quantities are minimal.

### **2. Chemical Truck Unloading - Power House (Sheet 1)**

The truck unloading areas for caustic and water treatment chemicals (mainly polymer, alum and salt) are located so that a spill from this area will go to the wastewater treatment system via the catch basins located near the northeast corner of the Water Treatment Plant and the containment trench on the track-side of the water clarifier.

The largest spill that could possibly occur would be a loss of a caustic tank truck. All spills in this area would be captured by the process sewer.

### **3. Chemical Truck Unloading - Medium Mill – (Sheet 1)**

The Medium Mill and Pulp Mill chemical additives unloading area is located in a paved area in the No. 3 Paper Machine Courtyard. All unloading lines are locked and equipped with shutoff valves and check valves. Receiving or Storeroom personnel unlock the unloading line covers and direct the drivers where to unload their shipments. Unloading lines discharge into the top of storage tanks so there is no possibility of inadvertently draining the tanks. A potential for spilling during unloading operations arises from overfilling a tank or a rupture in the unloading line. The possibility of overfilling an additive tank is minimized by inventory control. All Medium Mill additive storage tanks are located in areas drained by process sewers. Chemical spills during unloading operations resulting from unloading line ruptures would be captured in containment

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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berms or go to a process sewer catch basin located in the courtyard area.

Drivers are required to stay with their vehicles during unloading activities so that they may immediately stop unloading should that be necessary.

### **4. Chemical Truck Unloading - Linerboard Mill – (Sheet 2)**

The Linerboard Mill bulk chemical additives are unloaded in the additives area alleyway and unloading area on the riverside of the additives tank farm. The alleyway is paved, and the additive tanks are contained within an area that is paved and surrounded by a concrete berm. All unloading lines are locked and equipped with shutoff valves and check valves. Linerboard Mill personnel direct the drivers where to unload their shipments. Unloading lines go into the top of storage tanks so there is no danger of draining the tanks through the unloading lines. The potential for spilling during unloading operations arises from overfilling a tank or having an unloading line rupture. The possibility of overfilling an additive tank is minimized by inventory control. A chemical spill resulting from an unloading line rupture would be contained or go to a process sewer catch basin located in the area. Drivers are required to stay with their vehicles during unloading activities so that they may immediately stop unloading if necessary.

Linerboard Mill chemical additives that are received by tote bin are unloaded at the southeast corner door and moved inside to the No. 4 Paper Machine basement for storage. Any leaks from totes as they are stored in this location would drain to the process sewer. Empty totes are



## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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stored outside prior to return to the vendor.

### **5. Chemical Truck Unloading – Wastewater Treatment**

The wastewater treatment nutrient solution (a nitrogen/phosphorus blend) is unloaded on a designated concrete pad located adjacent to the nutrient storage tank near the primary clarifier. The unloading line is locked and equipped with a shutoff valve. The pad is sloped such that a spill will be captured and diverted to a containment area sump. After capture, this material can be pumped to the wastewater treatment system in a controlled manner. The unloading line goes into the top of the storage tank so there is no danger of draining the tank through the unloading line. The potential for spilling during unloading operations arises from overfilling a tank or a rupture in the unloading line. The possibility of overfilling the tank is minimized by inventory control.

Polymer for dewatering wastewater sludge is received in bulk and unloaded at the sludge press building. The unloading line goes into the top of the storage tank so there is no potential of draining the tank through the unloading line. The potential for spilling during unloading operations arises from overfilling a tank or a rupture in the unloading line. The possibility of overfilling the tank is minimized by inventory control. Any spillage that occurs during unloading would be captured by the process sewer. Drivers are required to stay with their vehicles during unloading activities so that they may immediately stop unloading if necessary.

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

Oil unloading has been addressed under the facility Spill Prevention, Control, and Countermeasures (SPCC) Plan. The potential hazards and countermeasures specified in the SPCC Plan are still applicable at this time.

### Internal Vessels

If a failure of storage tanks and process vessels that are within the plant buildings or diked areas occurred, the material would be discharged to the Mill's wastewater treatment plant.

### SPCC Regulated Tanks

Tanks that contain oil and other materials regulated under part 112, Subchapter D, Chapter 1 Title 40, CFR have been addressed under the facilities SPCC Plan. The potential hazards and countermeasures specified in the SPCC Plan are still applicable at this time.

### Outside Vessels

Process chemicals are stored in tanks that are outside production buildings in the following areas: 1) Black Liquor Tank Farm, 2) Recovery Area Tank Farm, 3) Water Treatment Area, 4) No. 3 Paper Machine Courtyard area (which extends from the Maintenance Fabrication Shop to the river dike wall) 5) Linerboard Mill Tank Farm, and 6) WWTP Chemical Storage Area at the Primary Clarifier.

#### 1. Black Liquor Tank Farm

Four (4) tanks are located north of the WWTP equalization basins within an

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

earthen dike with sufficient area to hold the contents of the largest tank. Three tanks contain weak black liquor, (2 @ 900,000 gallons and 1 @ 588,000 gallons) and the fourth tank is out of service and empty (125,000 gallons). Storm water that collects within this area is pumped to the equalization basin inlet structure.

### **2. Recovery Area Tank Farm**

A total of eight (8) tanks are located between the railroad tracks and the power/recovery building. The tanks are of various sizes, ranging from 1,000 to 150,000 gallons and contain soda ash, green liquor, black liquor, and finished liquor. The area around the tanks is concrete, with a concrete retaining wall on the west or trackside of the tank farm area. Three of the tanks have small, 6-inch high curbs. The area around the tanks is sloped to an open trench sewer. Major spills that exceed the capacity of the trench would drain to the east into the Power House basement, and south toward the woodyard area. Both areas drain to the WWTP.

### **3. Water Treatment Area**

There is an alum tank on the northeast corner of the water treatment area. Spills and leaks from this tank would drain to a process sewer.

### **4. No. 3 Paper Machine Courtyard**

This area has three tanks: two process (HD Stock Chest and Save-All Tank) and one chemical (Felt Cleaner Storage Tank). Spills and overflows from these tanks would be collected in process sewer catch basins that

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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drain to the WWTP. This area also contains the unloading area for the Medium Mill chemical additives, storage for chemical additives in tote bins, and storage for used oil.

### **5. Linerboard Mill Tank Farm**

This area has a total of ten (10) tanks, four chemical (caustic, alum, size, defoamer) and six process (broke, high density pulp, low density pulp, white water, reclaimed water, and dump chest). All but the dump chest are located on the northeast corner of the Linerboard Mill complex. The dump chest is located on the northwest corner. Spills and overflows from these tanks would be contained within the concrete containment, which surround each of the tanks. Unusually large stock spills could exceed the containment capacity and be released to the process sewer, and eventually treated in the primary clarifier

### **6. WWTP Chemical Storage Area at Primary Clarifier**

This area has one, 6,000-gallon tank storing a nutrient solution for the WWTP that is contained in a concrete structure. This structure drains to the WWTP. A separate phosphoric acid solution tank may be added in the future as a part of the Mill's nutrient discharge reduction plan.

Table 3-2 contains a listing of the outside storage tanks

### **Outside Storage Piles**

There are five (5) types of materials stored in outside storage piles: 1) DLK



## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

Clippings, 2) OCC/Mixed Office Waste, 3) Chips and Wood Refuse, 4) OCC Rejects and 5) Wastewater Sludge. Specific steps taken to minimize the potential release of pollutants to the environment are discussed in the following sections.

1. DLK Clippings Bale Storage Area (Sheet 1)

Recovered fiber (pre-consumer waste) known as Double Lined Kraft (DLK) clippings are used as a fiber source to make up to 25 percent of the furnish provided to No 1 and No. 3 Paper Machines. DLK is received in bales via truck or rail. The material is unloaded and stored at the north end of the Pulp Mill. Litter from handling the paper bales accumulates along the railroad tracks and truck unloading area at the north end of the Mill. Storm water from the rail unloading dock and the northern section of the outdoor storage area discharges to the river via sheet flow. Storm water from the truck unloading dock and the southern section of the outdoor storage area flows to the river via Outfall 021. A catch basin with a submerged, baffled discharge is provided to remove paper scraps from the stormwater runoff prior to Outfall 021. The outdoor storage area has a chain link fence and concrete barrier to help contain paper scraps. The area is managed to minimize accumulations of debris: scrap paper is routinely picked up from the area.

2. OCC / Mixed Office Waste Bale Storage Area

Old Corrugated Container furnish (OCC) is received in bales via truck or rail. OCC is stored in the Linerboard Mill or on an 8-acre paved outdoor storage area north of the Linerboard Mill. The original OCC pad, which

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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was constructed in 1996, drains stormwater runoff to the OCC/liner lift station for conveyance to the WWTP. The OCC pad addition, built in 1998, is adjacent to and south of the chip pile and covers an area of approximately 2 acres. The stormwater from the OCC pad addition flows through a sediment trap to remove any floating debris before it reaches Outfall 012.

### **3. Chip and Wood Refuse Piles**

The sawdust and chip piles are located adjacent to, and south of, the coal pile. These piles cover approximately 3.5 acres. Runoff from the sawdust and chip piles discharges to the Mill WWTP. For most rainfall events, water is contained under the pile due to the slope of the ground under the sawdust. Bark and debris from the piles could be present in the stormwater runoff for large rainfall events. No chemicals are added or applied to the stored sawdust. There is a wood retaining wall that controls the possible runoff of sawdust between the sawdust pile and the maintenance shop. Any runoff that escapes the wall would be intercepted by Drop Inlet #2 and carried to the utilities lift station. There is a potential for Outfall 009 to discharge overflow from the utilities lift station and the woodyard in the event of a very high intensity storm.

### **4. OCC Rejects**

Rejected material from the OCC processing area (plastics, metal, and other contaminants) are temporarily stored in a bunker North of the OCC Plant. This area drains to a process sewer. Some of this material is

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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placed on the wood refuse pile for fuel.

### **5. Wastewater Sludge**

Dewatered wastewater sludge is transported to a sludge storage bunker via conveyor and accumulated before transport to the mill landfill or offsite for beneficial reuse. The bunker area is paved. Any material that escapes the bunker is scraped up and transported to the mill landfill. The area drains to the mill WWTP.

### **Industrial Wastewater Treatment System**

The industrial wastewater treatment process that treats the mill's process wastewater is an extended aeration - activated sludge type system. An average of approximately 8.0 million gallons per day of wastewater are treated. The treatment system consists of four pump stations, a primary clarifier, two equalization basins, an aeration basin, a secondary clarifier, a polishing pond, and two sludge ponds. Sludge from the secondary clarifier is either returned to the aeration basin or dewatered using a belt filter press along with sludge from the primary clarifier and dredge material. Dewatered sludge is disposed of in the mill's industrial waste landfill or may be sent off site for beneficial reuse.

### **1. Upriver Lift Station**

The Upriver Lift Station is located adjacent to the James River outside the wet end of No. 3 Paper Machine. The Upriver Lift Station receives process wastewater from the Pulp Mill, Beater Room, and Medium Mill, and pumps it to the primary clarifier. If a high level occurs in the lift station, it activates

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

an alarm in No. 3 Paper Machine control room, and is also indicated by a beacon light at the lift station. The sump for the lift station is located 15 feet below grade. Failure of this lift station would not result in a direct discharge to the river, but would back up sewers in the Pulp Mill and Medium Mill. A BMP Procedure for the Upriver (Medium Mill) Lift Station is included in Appendix 2.

### **2. Utilities Lift Station**

The Utilities lift station is located at the south end of the Medium Mill parking lot, between the main road and the James River. The Utilities lift station receives process wastewater from the Woodyard, Power House, Chemical Recovery, and Evaporator areas, and pumps it to the Equalization Basins, directly to the aeration basin or to the primary clarifier. In the event of a catastrophic piping or pump failure, or a complete electrical failure of primary and backup systems, it would be possible for the main lift station to overflow, which could result in untreated wastewater being discharged through Outfalls 007 and 009. A BMP Procedure for the Utilities Lift Station is included in Appendix 2.

### **3. Linerboard Mill Lift Station**

The Linerboard Mill lift station receives process wastewater from the OCC fiber facility and No. 4 Paper Machine and pumps it to the primary clarifier. If a high level occurs in the lift station, an alarm is activated in the No. 4 Paper Machine control room. A high level in this lift station can result in back-up of wastewater in the process sewers in the OCC/Linerboard Mill



## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

which could result in overflow to stormwater Outfalls 012, 013 and 015. A BMP Procedure for the Linerboard Mill lift station is included in Appendix 2.

### **4. Equalization Basins**

The two, 1-acre equalization basins each hold approximately 3 million gallons. If an overflow of the equalization basins occurred, it would result in a wastewater discharge via storm water Outfall 018. There are written procedures contained in the Operations and Maintenance Manual for the WWTP for diverting flow around the equalization basins to the aeration basin in the event of high flow rates to the WWTP or due to other operational situations.

### **5. Secondary Clarifier Lift Station**

The secondary clarifier lift station is located at the south end of the aeration basin, adjacent to the secondary clarifier. The secondary clarifier lift station pumps aerated wastewater from the aeration basin into the secondary clarifier. The level in the aeration basin is monitored by the WWTP operators.

### **6. Aeration Basin**

The aeration basin is a 5-acre lagoon used for extended aeration of the Mill wastewater and has an effective volume of about 18 million gallons. Return activated sludge is returned to the aeration basin from the secondary clarifier. If an overflow of the aeration basin occurred, it would result in a

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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discharge to the polishing pond.

### **7. Polishing Pond**

The Polishing Pond is a 15-acre lagoon used to settle solids from the secondary effluent and polish the water by natural aeration to remove additional BOD from the treated wastewater prior to discharge. It has a capacity of approximately 30 million gallons.

### **8. Sludge Dewatering System**

Primary sludge is pumped to the sludge lift station from the primary clarifier. Secondary sludge is wasted from the secondary clarifier to the sludge lift station via flow by gravity. The sludge lift station pumps to two sludge equalization tanks. If a high level in the sludge lift station occurs, it would overflow to the polishing pond. The equalization tanks are equipped to mix the primary and secondary sludge together to provide a consistent feed to the belt press. The sludge tanks are prevented from overflowing by high-level interlocks, which shut down the sludge lift station when sludge tank level exceeds a designated level. The lift station may also pump sludge to the sludge ponds if the sludge dewatering system is down and the tanks are at capacity.

Dewatered sludge is conveyed outside the belt filter press building into an uncovered concrete sludge storage bunker. Lime may be added to the sludge from a lime silo that is mixed with the sludge in a screw conveyor. The sludge bunker has 8 foot concrete walls on 3 sides and can hold up to

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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200 cubic yards of dewatered sludge. The sludge bunker area drains back to the filtrate pump station, which pumps all wastewater back to the aeration basin. Storm water from all outside storage areas drains to the WWTP.

### **9. Sludge Dewatering Lagoons**

The sludge dewatering lagoons consist of two ponds totaling about 7 acres in area that serve as a short term storage area for sludge if the belt filter press is inoperable due to maintenance reasons, or should a condition occur when sludge generating capacity exceeds dewatering capacity. Sludge is pumped from the sludge lift station to the dewatering lagoons and allowed to settle. The supernatant is decanted and returned to the aeration pond. After sludge is reclaimed from the sludge lagoons it is dewatered at the belt filter press, or landfilled, depending on the moisture content.

### **Sanitary Wastewater Treatment**

The sanitary wastewater package plant serves mill employees and several structures in the community of Big Island. The system is an extended aeration modification of the activated sludge process, designed for 40,000 gpd. Final treated effluent from the package plant is chlorinated before discharge to the Mill process wastewater treatment system. Sanitary sludge is pumped from the sludge holding tank as necessary and transported to the Lynchburg Municipal Wastewater Treatment Plant for disposal. A licensed contractor retained at the time of service performs the pumping and hauling. Wastewater is conveyed to the sanitary wastewater package plant by either the Woodyard sanitary lift station, Linerboard Mill sanitary lift station, IR sanitary lift station, or the Guardhouse sanitary lift

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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station.

1. Woodyard Sanitary Lift Station

The Woodyard sanitary lift station is located on the southeast corner of the wood refuse pile. All sanitary wastewater generated from Mill areas north of chip handling and certain structures from the community of Big Island flow through this lift station as they are pumped to the sanitary wastewater package plant. Due to the hydraulic profile of the sanitary sewer system, in the event of a pipe or pump failure, it would be possible for untreated sanitary wastewater to be discharged to the process wastewater treatment system.

2. Linerboard Mill Sanitary Lift Station

The Linerboard Mill sanitary lift station is located in a manhole immediately north of the Linerboard Mill firewater pumphouse. Sanitary wastewater from the Linerboard Mill is pumped into the sanitary force main to the sanitary wastewater treatment package plant. If a high level occurs, an alarm activates a flashing beacon at the lift station. An overflow of the Linerboard Mill sanitary lift station could result in a discharge to storm water Outfall 015. Bales of recycle paper may be used to contain overflows and minimize the chance of discharge to Outfall 015.

3. Information Resources (IR) Sanitary Lift Station

The Information Resources lift station is located in a 100-gallon septic tank just outside the building. Sanitary wastewater from the IR Center is



## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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pumped into the sanitary force main. If a high level occurs, an alarm activates a flashing beacon at the lift station. An overflow of this lift station will go to the WWTP.

### **4. Guardhouse Sanitary Lift Station**

The Guardhouse sanitary lift station is located in a 500-gallon septic tank just outside the building. Sanitary wastewater from the Guardhouse lift station is pumped into the sanitary force main. If a high level occurs, an alarm activates a flashing beacon at the lift station. An overflow of this lift station could result in a discharge to stormwater Outfall 018.

### **Piping Systems**

There are several piping systems that carry potential pollutants on an intermittent basis. These present the most risk when unloading from tank trucks or rail cars that are not routed in controlled areas. These intermittent use lines are always under observation during use, and therefore pose minimal possibility for release of significant amounts of pollutants.

There are four (4) piping systems that carry significant amounts of potential pollutants on a regular basis that are not routed inside controlled areas of the Mill. They are as follows.

### **1. Process Wastewater Pipelines**

Process wastewater is piped from the Medium Mill and Liner Mill lift stations

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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to the primary clarifier; from the primary clarifier and utilities lift station to the equalization basins and/or the aeration basin; and from the equalization basins to the aeration basin. These lines are all buried except for where the line crosses Reed Creek between the equalization basins and the aeration basin. These lines were replaced or installed as follows: Upriver lift station to Utilities lift station (1985), equalization basins to aeration basins (1988, partial replacement 1998), main lift station to equalization basins (1989), aboveground pipe bridge across Reed Creek (1992), primary clarifier to equalization basins (1995) and the equalization basin bypass (2007).

Tees and isolation valves placed at strategic locations throughout the piping system allow individual components to be isolated or bypassed for maintenance or replacement.

### **2. Wastewater Sludge Pipelines**

Sludge from the primary clarifier is pumped via an underground pipeline to the sludge lift station. Up to where the line crosses Reed Creek, the line was replaced in 2008. The portion of this line that is aboveground as it crosses Reed Creek was replaced in 1996. From that point to the Sludge lift station, the line was replaced in 2009. Line cleanouts are provided at intervals of approximately 200 feet. Return activated sludge from the secondary clarifier flows by gravity through underground piping to the head end of the aeration basin. This line was installed in 1995. Waste activated sludge flows by gravity from the secondary clarifier through underground piping to the sludge lift station.

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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Sludge is pumped from the sludge lift station to the sludge equalization tanks. Alternatively, sludge can be diverted to the sludge dewatering ponds during times that sludge volume exceeds sludge press processing capability or the dewatering system is off-line. Lift stations on the north end of each sludge dewatering lagoon pump supernatant back to the aeration basin.

### **3. Black Liquor Pipeline**

Weak black liquor is conveyed between the Recovery area and the black liquor/fuel oil tank farm through aboveground piping. Weak black liquor is conveyed between the Pulp Mill and Recovery area through welded stainless steel piping. This piping is routed underneath the rail car unloading docks. If a leak were to develop in this pipeline, liquor would drain into the lower level of the warehouse and then to the ground in the area between the Power House and Main Office. This material would have to travel a considerable distance through the Mill prior to reaching a drain to storm water Outfall 005.

### **4. Sanitary Wastewater Pipeline**

Sanitary wastewater is piped underground to the Woodyard sanitary lift station. From the Woodyard lift station, sanitary wastewater is conveyed aboveground via an aboveground pipeline. This pipeline was installed in 2008 and runs from the Woodyard sanitary lift station to the area near the tank farm. From there it runs underground to the sanitary package plant.

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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### Landfill

The Amherst landfill is located east of the Mill and is currently in operation. Waste is hauled from the Mill in dump trucks. All precipitation that falls in open cells is captured and the leachate is treated in the Mill WWTP. Sediment basins at the landfill are used to trap sediment from runoff at Outfall 022 and Outfall 028. The sediment basins are cleaned as required to maintain storage capacity and sediment trapping capability.

### **Nonstructural BMPs**

#### Good Housekeeping

Good housekeeping practices are designed to maintain a clean and orderly work environment in order to reduce the amount of pollutants present in stormwater runoff from the site.

#### Operation and Maintenance Activities

- Maintain clean floors and ground surfaces using brooms, vacuums, or other cleaning machines.
- Pick up and dispose of garbage and waste material on a regular basis. Hoppers are picked up daily and taken to the landfill.
- Maintain all plant equipment.
- Regularly inspect for leaks and conditions that could cause leaks.
- Operations' personnel look at drums and tote storage area regularly for deficiencies.



## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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- Verify that cleanup procedures are understood by all employees.

### Preventive Maintenance

Stormwater management devices are routinely inspected and maintained. Efforts are made to maintain drop inlets and manholes and the area surrounding them free of all debris so that stormwater can easily flow through them. Trench drains, roof drains, and floor drains and the areas around them are kept clear so that they do not get clogged and water can easily enter them. Catch basins are cleaned periodically of sediment such that carryover is minimized into the stormwater conveyance system from the catch basin.

Facility equipment is inspected and tested in accordance with the manufacturer's recommendations to uncover conditions that could cause a breakdown and discharge of pollutants. All chemical delivery systems, including pumps and transfer piping, are inspected to see that they are working adequately and show no signs of corrosion or damage, so that no chemicals will be spilled during the delivery process.

To ensure the structural integrity of tanks and storage vessels, the Big Island Mill conducts tank inspections on a regular frequency as prescribed in GP's corporate guidance. Inspections include ultrasonic thickness testing of steel tanks and "hands on" visual inspection of tile and concrete tanks. The inspections are conducted by qualified inspection firms. In addition, certain tanks are drained and visually inspected by mill personnel during major mill maintenance outages. These tanks are inspected on the basis of age, material

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

stored, and materials of construction. Records of vessel inspections and other pertinent information are maintained in the Engineering Dept. files.

### **Spill Prevention and Response Procedures**

Below is the list of permitted outfalls, as identified on the maps in Appendix 1, and the specific potential spill areas associated with each:

Outfall 005 (Sheet 1) - Debris around the loading and unloading areas for rail and trucks, and from some roof areas of the Administration Building, could result in a discharge from this outfall. Normal spills and leaks will be collected and drain to the WWTP. The loading docks are routinely cleaned to prevent loose paper from reaching the outfall.

Outfall 007 (Sheet 1) – This outfall drains the employee parking lot and the main road, but backup from the utilities lift station could also result in a discharge from this outfall.

Outfall 008 (Sheet 1) – This outfall discharges off-site stormwater only.

Outfall 009 (Sheet 1) – This outfall primarily discharges stormwater from roadway drainage. There is a potential for discharging overflow from the main lift station and the woodyard during high intensity storm events.

Outfall 010 (Sheet 2) – This outfall drains stormwater from the parking lot and main

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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road.

Outfall 012 (Sheet 2) – The parking lot and roadway drains to this outfall. Outfall 012 picks up the flow from the OCC pad addition after the debris has been removed via a sediment trap. See BMP in attached Appendix 2.

Outfalls 013 and 014 (Sheet 2) – This outfall drains stormwater from the truck scales, main road and parking areas.

Outfall 015 (Sheet 3) – This outfall discharges stormwater from the railroad tracks west of the No. 4 Paper Machine, as well as run-off from around the machine and its roof. In an unlikely event of catastrophic failure, the tanks around No. 4 Paper Machine could also discharge to this outfall.

Outfall 017 (Sheet 3) – This outfall drains surface runoff from the main road and the area around the equalization basins.

Outfall 018 (Sheet 3) – This outfall drains surface runoff between the equalization basins and the main entrance.

Outfall 021 (Sheet 1) – This outfall drains truck and rail unloading areas and outdoor storage area for secondary fiber (DLK). See BMP in attached Appendix 2.

Outfall 022 (Amherst Landfill topo) – This is the outfall from the sediment basin at

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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the Amherst landfill. Any precipitation that falls on the open cells at the landfill is captured and treated in the Mill WWTP. Any waste placed outside or blown from the open cells could potentially impact discharge from this outfall.

Outfall 023 (Amherst Landfill topo) – This outfall drains the haul road near the Amherst landfill entrance.

Outfall 025 (Sheet 2) – This outfall drains from the lowest point on the Mill's Amherst landfill haul road. This outfall could discharge spilled material from trucks on the road between the Amherst landfill and the Mill. Field observations showed this outfall also discharges a dry weather stream to the James River.

Outfall 028 (Amherst Landfill topo) – This is the outfall from the Phase III sediment basin at the Amherst landfill.

All materials are handled and stored in such a way as to minimize contact with stormwater runoff and precipitation. The following practices are generally effective in reducing stormwater contact with pollutants:

- a. Install and maintain leak detection devices, overflow controls, and diversion berms.
- b. Disconnect drains that could possibly convey materials from process areas to the storm sewer.
- c. Adopt effective housekeeping practices.
- d. Perform visual inspections and regular maintenance on storage tanks,



## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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valves, pumps, pipes, and other equipment at the plant.

- e. Substitute less or non-toxic materials for toxic materials.
- f. Ensure appropriate security.

Specific spill response plans for the areas having special requirements are included in the following sections:

Water Chemicals/Caustic Truck Unloading - In the event of a major spill in this area, sandbags should be placed around all storm drains in the parking lot areas to prevent materials from reaching Outfall 007 or any other storm outfalls.

Chemical Recovery - In the event of a catastrophic failure of any of the large storage tanks flow of material escaping the tank's containment system would be collected by using front end loaders to obtain bark/sawdust from the bark pile and placing them in the path of the spill. Several scoops of bark/sawdust should provide an ample dam to prevent material from reaching the stormwater catch basin and allow for cleanup of the material via normal physical and chemical (neutralization) methods.

No. 3 Paper Machine Courtyard (River Bank by No. 3 Paper Machine) - Spills in this area flow to the upriver lift station and then to the WWTP. In the event of a major spill, bark/sawdust would be brought from the bark pile and used to block off flow going into the parking lot. The contained material could then be flushed into either the catch basin in the chemical unloading area or the catch basin outside the maintenance shop that goes to the WWTP. If the spill was from the HD Stock

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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Chest, the material would quickly be dewatered and the remaining fiber picked up by front end loader and transported to the landfill.

The Big Island Mill maintains a supply of material and equipment at various locations to be used to contain and cleanup any material spilled at the facility. In the event of a spill near any process or storm sewer drain, efforts would be made to berm the opening to the sewer and contain the spilled material. The mill's SPCC should be referenced for a current list of the equipment and material available for spill control and cleanup.

The activated sludge wastewater treatment system at the Big Island Mill currently operates well below the discharge limits required by the VPDES permit. While the wastewater treatment plant is well suited to treat most releases in the Mill, it is not used as a substitute for proper management of oil and hazardous substances within the Mill. In the event of a major spill, every effort would be made to isolate the spill in one of the equalization basins. This material would either be managed in place or be slowly fed into the aeration basin. The result would be much less of an impact on the wastewater treatment system. Two such occurrences would be: (1) Loss of a caustic tank in the Chemical Recovery Plant, and (2) Loss of a liquor tank (weak or strong) in the Recovery Plant. These scenarios are discussed in the following sections.

### **1. Caustic Tank Failure**

The catastrophic failure of a full caustic tank in the Chemical Recovery Plant, resulting in a spill of 14,000 gallons of 50 percent caustic to the

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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process sewer, would ultimately flow to the WWTP. With an average flow of 8.4 MGD, and normal levels maintained in the aeration basin and polishing pond, this amount of caustic would increase the pH of the aeration basin. This pH could be expected to affect the microorganisms in the aeration basin, with a resulting sustained decrease in wastewater treatment efficiency. The management of flow in the equalization basins would be required in this case to prevent any final effluent violation of permit limits for pH, and possibly BOD<sub>5</sub> and TSS.

### **2. Loss of Weak or Strong Black Liquor Tank**

A catastrophic failure of a strong black liquor tank (100,000 gallons) would be collected by the process sewer and discharged to the wastewater treatment system. This tank has a BOD<sub>5</sub> loading of 50,000 kilograms. The catastrophic failure of a weak black liquor tank (900,000 gallons) would be retained in the containment structure at the tank farm. This material could be recovered or metered into the WWTP. Clearly, flow management utilizing the holding capabilities of the equalization basins would be required in either case to prevent over-loading the treatment system and possibly exceeding the effluent discharge permit limitations

There is little potential of the wastewater treatment plant flow limits being exceeded at any time due to chemical spill or catastrophic tank failure. The system was designed for a maximum sustained flow rate of 10.87 million gallons per day (MGD), and the largest vessel in the Mill that could potentially discharge directly to the WWTP is 0.15 MGD. Therefore, a catastrophic failure of the largest tank in

## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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the mill would not cause flow rates at the treatment plant to exceed design limits.

### Inspections

Facility personnel are responsible for inspecting all of the devices, controls, and equipment identified above and any deficiencies must be corrected as soon as practicable. The results of the inspections are located in the Environmental Dept. files. These inspections are performed as part of the comprehensive site evaluation as described in the Mill's Stormwater Pollution Prevention Plan. When a spill or leak is discovered, the procedures are set forth as specified in the Mill's Stormwater and/or Spill Prevention Plan.

### Employee Training

Employee training requirements and records are kept on file in the Personnel Department or online. On-the-job training is provided on all maintenance and production jobs in the Mill. Workers in lower job classifications are set up for a specified number of days to work with, and be trained by, senior operators and supervision before they are allowed to fill a job. Normal and emergency operating procedures, cleanup, maintenance, and control systems are taught.

All Mill employees have also been trained under the Mill's Hazard Communication Program for chemical handling. Annual refresher classes are given for these areas. Computer based training is also conducted annually that discusses each storm water outfall, good housekeeping, material management practices, spill containment, spill reporting, and BMPs.



## **Appendix 2: Description of Potential Pollutant Sources & BMPs**

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### **Structural BMPs**

#### **Sediment and Erosion Control**

Erosion and sediment control measures are erected around the areas to be disturbed in any construction activities. These include check dams, silt fences, and ditches. Areas with soil disturbance are seeded or otherwise covered as appropriate.

#### **Management of Runoff**

The Big Island Mill facility incorporates traditional stormwater management practices in a manner that reduces pollutants in stormwater discharges from the facility. These practices include diversion berms or dikes around outdoor tanks and storage areas and erosion control devices where needed. The practices undertaken at this facility to reduce potential pollutants in the stormwater discharges are provided in the Mill's Stormwater Pollution Prevention Plan and Spill Prevention, Control and Countermeasures Plan.

**STORMWATER  
BEST MANAGEMENT PRACTICES  
OUTFALL 012**

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Outfall 012 discharges storm water from the OCC storage pad and truck staging area. The storm water flows into a sediment trap, which captures floatables and allows sediment to settle prior to entering the river.

The following are sampled as required for the VPDES permit: TSS, BOD, TKN and pH. This outfall is sampled annually.

BMP's established for this outfall are to address housekeeping around area just outside of the OCC pad:

1. Install screens that help filter the trench that drains along the OCC pad into the sediment trap.
2. Routinely clean the trench that captures storm water along the chip pile and the drain area to the sediment trap.
3. Inspect the sediment trap monthly.
4. Thoroughly vacuum the sediment trap of debris and captured solids at least once per quarter or more frequent as needed.

Departments responsible for housekeeping are Liner Mill OCC, Woodyard, and Environmental.

**STORMWATER  
BEST MANAGEMENT PRACTICES  
OUTFALL 014**

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Outfall 014 drains storm water from the truck scales, main road and parking areas. Stormwater runoff from the area enters collection basins prior to discharging to the river.

The following parameters are sampled annually as required by the VPDES permit: pH, TSS, BOD<sub>5</sub>, COD, and TKN. Total Recoverable Copper is sampled quarterly.

BMP's established for this outfall include spill countermeasures and good housekeeping. A spill kit that contains socks, pads, and absorbents is located at the scale house. These materials can be used by personnel in the scale house to facilitate prompt cleanup of any material that may be deposited as a result of leaks or spills from truck traffic waiting to enter the scales. Personnel in the scale house have been trained about the spill kit location and its contents, and instructed on how to use and dispose of the cleanup residuals from use of the kit.

The area around the inbound scale is cleaned of debris as needed to aid in minimizing TSS from the drainage area. Service Crew personnel or a contractor are responsible for cleaning the area along the roadway to remove trash, soil and other debris that may impact runoff to this outfall.

Due to the variability of conditions of the many over the road trucks staged in this area, the outfall drainage area will be visually inspected monthly by environmental personnel to determine if the frequency of cleaning must be increased. This will be documented during monthly inspections as required by the SWPPP.

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**STORMWATER  
BEST MANAGEMENT PRACTICES  
OUTFALL 017**

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Outfall 017 drains storm water from the equalization basins and main road areas. Stormwater runoff enters collection basins prior to discharging to the river.

The following are sampled annually as required for the VPDES permit: TSS, BOD, COD and TKN.

The BMPs used for this outfall are solids filtering and inspections. A silt screen and bales of hay have been placed in several locations in the drainage ditches that flow to the outfall to help filter out TSS. Secondly, the gravel area entering the equalization basin will be inspected and monitored on a quarterly basis to determine if additional gravel will needed to be placed to prevent excessive silt runoff from the area.

As needed, the silt screen and the hay bales will be replaced to maximize filtration of stormwater. Additional gravel will be put down in the EQ pond entrance road as needed.

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**STORMWATER  
BEST MANAGEMENT PRACTICES  
OUTFALL 021**

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Outfall 021 drains storm water from truck unloading areas and secondary fiber double lined kraft (DLK) storage area. Stormwater treatment is provided by a baffled sediment basin.

The following are sampled annually as required for the VPDES permit: TSS, BOD, TKN and pH. Total Recoverable Zinc is sampled once per quarter.

BMPs used for this outfall are sedimentation, filtering, good housekeeping and inspections. Concrete barriers have been placed around the outfall to filter out DLK clippings that may be swept towards the basin during a storm event. The baffled sediment basin provides sediment removal.

The following items address housekeeping around the outfall:

1. Clean the area around the catch basin of sediment, leaves and any other debris monthly.
2. Clean the area of DLK clippings on a monthly basis.
3. Pump out the catch basin at least every two months.

The outfall drainage area will be visually inspected monthly by environmental personnel to determine if frequency of cleaning must be increased. This will be documented on the monthly inspection sheet. Pulp mill personnel are responsible for this area.



**STORMWATER  
BEST MANAGEMENT PRACTICES  
OUTFALL 023 & 025**

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Outfalls 023 and 025 drain storm water from the haul road at the Amherst Landfill. The following parameters are sampled as required by the VPDES permit for both outfalls: TSS, TKN and total recoverable iron. In addition, COD is analyzed for 023. Certain best management practices described below have been established to improve the quality of the storm water runoff.

Truck drivers hauling fly ash and rejects from the old corrugated container (OCC) plant to the landfill must ensure that the hopper is not overloaded, and the tarp is secured on top of the hopper to prevent material from blowing out of the hopper. All drivers hauling to the landfill will ensure that all materials are covered as needed to prevent anything from blowing out of the hopper. Annual training is provided to the truck drivers to review the importance of not overfilling the trucks and in properly covering loads going to the landfill.

Outfall 023 drains runoff from the slopes of Phase 1 of the landfill which did not receive waste during 2012, as well as some of the road areas that go to this Phase. Silt fencing, bales of straw and rip-rap have been installed in key drainage areas to prevent erosion as well as to aid in filtering any sediment that may enter the drainage.

Outfall 025 drains runoff from an area of the haul road to the landfill on the opposite side of the James River. Silt fencing, bales of straw and rip-rap have been utilized to control sediment runoff in this drainage area as well.

Weekly inspections will be conducted for the areas that drain to each of the outfalls, and the inspections will focus more on ensuring adequate silt fencing is maintained and roadway conditions are kept in good condition. In addition, when there is unusually heavy truck traffic, structural BMPs will be closely monitored to ensure that they are adequate.

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**STORMWATER  
BEST MANAGEMENT PRACTICES  
OUTFALL 555**

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Outfall 555, composed of 005, 007, 009, 010, 013 drains storm water from the entrance road, parking lot, and loading and unloading areas. Water runoff enters drains prior to exiting to the river

The following are sampled as required for the VPDES permit: TSS, BOD, TKN and pH are collected annually.

BMP's established for this outfall are to address housekeeping around the parking areas. As needed, the parking lot will be swept to minimize sediment buildup in the areas that drain to storm water.

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**STORMWATER  
BEST MANAGEMENT PRACTICES  
EQUALIZATION BASINS**

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**EQUALIZATION BASINS SPILL MANAGEMENT PROCEDURE**

In the event of a catastrophic spill to the mill wastewater treatment system, the Equalization Basins have some capacity to mitigate flow to the Aeration Basin. Additional samples will be taken during such an event to determine anticipated affects on the wastewater treatment system.

Rather than to the Equalization ponds, flows may be sent directly to the aeration basin for operation need or in the event that Equalization pond levels become high. Either the Environmental Operator or Sludge Press Operator will switch the valves.

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## **STORMWATER BEST MANAGEMENT PRACTICES LINERBOARD MILL LIFT STATION**

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### **BEST MANAGEMENT PRACTICES FOR LINERBOARD MILL LIFT STATION**

The Linerboard Mill lift station is located east of and adjacent to No. 4 Paper Machine (PM). The lift station receives wastewater from No. 4 PM and the OCC Plant. The lift station is equipped with a manually cleaned bar rack and three 2600 GPM solids-handling Gorman-Rupp lift pumps. The lead lift pump is provided with a variable frequency drive and under normal operating conditions is the only pump operating. The remaining pumps handle spill events and storm water flows up to a 25-year storm event. Wastewater is normally pumped from the Linerboard Mill lift station to the primary clarifier, however, during maintenance events or operational upsets, wastewater from the Linerboard Mill lift station can be diverted to the equalization basins, depending on valve positions.

One pump can be operated by a propane-powered generator. The generator would automatically start if a loss of power occurs.

#### **NORMAL OPERATING AND MAINTENANCE PROCEDURES**

On a daily basis, a Linerboard Mill Operator inspects the lift station noting housekeeping, any unusual sounds, equipment condition, leaks, water level, rejects accumulation etc. The bar rack located on the suction side of these pumps is raked clean on an as-needed basis, and any accumulation of rejects material in the lift station is removed promptly. The Linerboard Mill Supervision is notified of any needs.

A preventative maintenance system has been developed for the lift station pumps and a six month basis. The backup generator is checked monthly by E&I technicians. Maintenance is notified through the work order system for any routine mechanical and/or electrical needs. Shift Mechanics and E&I Technicians are also available for immediate action.

Linerboard Mill Operators, and/or Maintenance check the proper operation of the pump float switches and the high level alarm system periodically. An alarm condition for high level is activated in the Linerboard Mill control room. Vacuuming of the lift station by an outside contractor will be done on an as needed basis to remove floating debris that builds up over time. This will be determined by operations.

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**STORMWATER  
BEST MANAGEMENT PRACTICES  
OUTFALL 001**

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**BEST MANAGEMENT PRACTICES PLAN FOR OUTFALL 001**

Outfall 001 is a clear non-contact cooling water discharge into the James River immediately downstream of the Upriver (Medium Mill) lift station. Access to the discharge for monitoring purposes is provided by a stairway over the stone flood protection berm and down the bank to the discharge point on the riverbank.

This discharge carries clear water discharges from various operations in the Pulp and Medium Mill areas. These include non-contact cooling water for air conditioners and process equipment. Such waters from Pulp Mill sources are brought together in a collection tank near the Blow Tank.

The discharge flow is measured with a Parshall flume and a check valve is mounted on the end of the discharge pipe to prevent flood water from backing up into the system from the river.

A flow composite sampler and sample refrigerator is located in No. 3 PM basement near the multi-use pit. 24-hour composite samples are collected for laboratory analysis.



**STORMWATER  
BEST MANAGEMENT PRACTICES  
MEDIUM MILL LIFT STATION**

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**BEST MANAGEMENT PRACTICES FOR MEDIUM MILL LIFT STATION  
(Upriver Lift Station)**

The Medium Mill lift station is located in No. 3 Paper Machine (PM) courtyard immediately outside No. 3 PM wet end. The lift station is equipped with a basket screen, and three Gorman-Rupp solids-handling pumps. The Medium Mill lift station receives wastewater from the Pulp Mill, Stock Prep, and Nos. 1 and 3 PM. Wastewater is normally pumped from the Medium Mill lift station to the primary clarifier, however, during maintenance events or operational upsets wastewater from the Medium Mill lift station can be diverted to the equalization basins, or to the aeration basin, depending on valve positions.

High water level in the lift station activates an "effluent high water level alarm" in the Medium Mill PM control room. In addition to the control room alarm, there is a flashing red beacon light at the lift station that automatically turns on when the water reaches a high level in the wet pit. This alarm will alert personnel within visual range of the lift station of high water in the lift station wet well.

**NORMAL OPERATING AND MAINTENANCE PROCEDURES**

On a daily basis, the Medium Mill Assistant designate inspects the lift station noting housekeeping, any unusual sounds, equipment condition, leaks, water level, etc.

A preventative maintenance system has been developed for the lift station on a six month basis. Maintenance is notified through the work order system of any routine mechanical and/or electrical needs. Shift Mechanics and E&I Technicians are available for immediate action.

Vacuuming of the lift station by an outside contractor will be done on an as needed basis to remove floating debris that builds up over time. This will be determined by operations.

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## **STORMWATER BEST MANAGEMENT PRACTICES UTILITIES LIFT STATION**

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### **BEST MANAGEMENT PRACTICES FOR UTILITIES LIFT STATION**

The Utilities lift station is located at the south end of the medium mill parking lot, between the main entrance road and the James River. The lift station is equipped with a bar screen and three Gorman-Rupp pumps, each with a capacity of 2,500 gpm. The Utilities lift station receives wastewater from the Power House, Recovery, and Evaporator areas, and storm water from the Woodyard area. Wastewater is normally pumped from this lift station to the Equalization Basins, however, during maintenance activities or operational upsets, wastewater can be diverted to the aeration basin as required.

The main lift station pumps are normally controlled in automatic mode according to wet well level. The order of operation of the pumps is automatically sequenced every 24 hours to ensure that all pumps remain operational and free of solids buildup. As the level in the lift station rises, if the third pump turns on, an alarm sounds in the Power House control room, and a flashing red light at the main lift station turns on. The alarm indicates a high level in the lift station.

There is a redundant power supply to the main lift station provided by a generator. Power is automatically switched to generator if the main feed fails.

### **NORMAL OPERATING AND MAINTENANCE PROCEDURES**

The Recovery 2nd Assistant inspects the main lift station on a daily basis, noting any unusual sounds, equipment condition, leaks, water level, etc. and notifies the Utilities Supervisor of any needs. Service Crew will be requested to perform routine housekeeping duties and clean heavy accumulations from the rack.

A preventative maintenance system has been developed for the lift station. Maintenance is notified through the work order system for any routine mechanical and/or electrical needs. Quarterly PM's are performed on all three pumps by maintenance as well as a visual check by operation of process drains carrying wastewater to the main lift station. Each month E&I is responsible for checking the proper operation of the pump float switches, cleaning the ball floats and verifying the high level alarm on the lift station.

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**STORMWATER  
BEST MANAGEMENT PRACTICES  
WOODYARD SANITARY LIFT STATION**

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**BEST MANAGEMENT PRACTICES FOR SANITARY LIFT STATION**

The sanitary lift station is located at the southeast corner of the wood refuse pile in the Woodyard. This lift station receives sanitary wastewater from the Medium Mill, Power House, Recovery, and Woodyard areas, as well as part of the Big Island community. Wastewater is pumped from this lift station to the sanitary wastewater treatment package plant located north of the equalization basins. Two Gorman-Rupp pumps are located at this lift station, each capable of pumping the design flow of 40,000 gallons per day. As such, only one pump usually operates at a time. The order of operation of the pumps is manually sequenced every week to ensure that all pumps remain operational and free of solids buildup.

**NORMAL OPERATING AND MAINTENANCE PROCEDURES**

An Environmental Operator inspects the lift station on a daily basis, noting any unusual sounds, equipment condition, leaks, water level, etc., notifying the Environmental Supervisor of any needs. Maintenance is requested through the work order system and followed up with the area supervisor.

At least twice a year, the Environmental Operator in cooperation with Maintenance personnel check the proper operation of the pump float switches and the high level alarm system. Preventive maintenance is performed on each pump every six months.

Each pump is operated in automatic mode under normal operating conditions. The pumps are activated by level switches in the wet well. The alarm system for the lift station contains a backup power supply for alarm annunciation. Alarm condition is initiated by high level or power failure in the lift station. Each alarm condition is verified by an audio-visual alarm located at the lift station and a common audio-visual alarm condition signal is transmitted to the power control room, which is manned 24 hours per day.

Table 3-1

## Chemical Unloading Areas

Process Area	Unloading Area	Delivery By	Chemical/Material	Spill Containment/Disposal
Recovery	Rail siding	Rail Car	Soda Ash	Area slopes toward trench which drains to process sewer and WWTP.
Recovery	Recovery Area Tanks at Courtyard	Truck	Caustic, Soda Ash	Concrete pad, area slopes toward trench which drains to process sewer and WWTP.
Power House - Water Treatment	Courtyard outside NE corner of Water Treatment Plant	Truck (totes or multi-compartment bulk)	Caustic, Boiler Water Treatment, Defoamer, Polymer, Salt, Alum	Paved area, slopes towards process sewer and WWTP.
Medium Mill	No. 3 Paper Machine Courtyard	Truck (totes or bulk)	Detergent or Caustic based cleaners, Defoamer, Oil, Defoamer, Feltwash	Paved area, slopes towards process sewer and WWTP.
Linerboard Mill	Additive unloading alleyway and south end of No. 4 PM basement	Truck (totes or bulk)	Detergent or Caustic based cleaner, Biocide, Defoamer, Shade control, Polymer, Alum, Starch, Sizing, Antiskid	Paved area, slopes towards process sewer and WWTP.
Wastewater Treatment	Primary Clarifier	Truck (bulk)	Nitrogen/Phosphorus Blend (Nutrient)	Area is contained. Stormwater is pumped to WWTP.
Wastewater Treatment	Sludge Press	Truck (bulk)	Polymer	Concrete pad drains to process sewer and WWTP.

Table 3-2

## Outside Storage Tanks

Process Area	Tank	Contents	Volume Gallons	Containment Drainage
Pulp Mill	Propane	Liquified Propane	1000 ea (2 tanks)	NA
Medium Mill	Felt Cleaner	Presstige 9050	6,400	Concrete containment pad. Area drains to process sewer & WWTP
Medium Mill	High Density (HD) Pulp Tank	Paper Stock	581,668	Concrete containment pad. Area drains to process sewer & WWTP
Medium Mill	Sweco	Paper Stock		Area drains to process sewer and WWTP
Medium Mill	Warm Water	Warm Water		Area drains to process sewer and WWTP
Medium Mill	Used Oil	Used Oil	1,000	Tank is contained
Water Treatment	Alum Tank	48.5% Alum	8,000	Tank is contained
Water Treatment	Boiler Condensate	Boiler Condensate	15,040	Area drains to process sewer and WWTP
Water Treatment	Salt Tank	Salt	8,500	Area drains to process sewer and WWTP
Water Treatment	Caustic Tank	Sodium hydroxide	7,530	Area drains to process sewer and WWTP
Recovery	Kerosene Tank	Kerosene	300	Area drains to process sewer and WWTP
Recovery	Sodium Carbonate (3)	Sodim Carbonate	39,657 ea	Area drains to process sewer and WWTP
Recovery	Strong Black Liquor	Strong black liquor	100,000	Area drains to process sewer and WWTP
Recovery	Green Liquor	Green Liquor	150,000	Area drains to process sewer and WWTP
Recovery	Swing Tank	Weak black liquor or green liquor	150,000	Area drains to process sewer and WWTP
Recovery	Surge Tank	Weak black liquor	16,919	Area drains to process sewer and WWTP
Recovery	Rec. Boiler Area Tanks (4)	Black liquor or green liquor	6,750 to 90,000	Area drains to process sewer and WWTP
Recovery	Finished Liquor Tank	White liquor	174,000	Area drains to process sewer and WWTP
Woodyard	Diesel fuel tank	Diesel fuel	4,000	Double walled tank with curbing
Woodyard	Gasoline Tank	Gasoline	1,000	Double walled tank with curbing
Linerboard Mill	Dump Chest	Paper Stock	177,732	Tank is loacted within concrete containment. Area drains to WWTP
Linerboard Mill	Caustic Tank	Sodim hydroxide	13,535	Tank is loacted within concrete containment. Area drains to WWTP
Linerboard Mill	Alum Tank	Alum 48.5%	13,535	Tank is loacted within concrete containment. Area drains to WWTP
Linerboard Mill	Size	Prequel 500	6,400	Tank is loacted within concrete containment. Area drains to WWTP
Linerboard Mill	Broke	Paper Stock	155,600	Tank is loacted within concrete containment. Area drains to WWTP



Table 3-2

## Outside Storage Tanks

Process Area	Tank	Contents	Volume Gallons	Containment Drainage
Linerboard Mill	High Density (HD) Pulp Tank	Paper Stock	667,071	Tank is located within concrete containment. Area drains to WWTP
Linerboard Mill	Low Density storage chest	Paper Stock	45,494	Tank is located within concrete containment. Area drains to WWTP
Linerboard Mill	Whitewater	Dilute stock solution	154,171	Tank is located within concrete containment. Area drains to WWTP
Linerboard Mill	Propane	Liquified Propane	1000 ea (2 tanks)	N/A
Linerboard Mill	Kerosene Tank	Kerosene	250	Tank is contained and area drains to stormwater sewer
Linerboard Mill	Starch Silo	Starch		Tank is located within concrete containment. Area drains to WWTP
Linerboard Mill	Size	Prequel 2000	10000	Tank is located within concrete containment. Area drains to WWTP
Linerboard Mill	Hercobond Tank	Chemical Additive	18722	Tank is located within concrete containment. Area drains to WWTP
Linerboard Mill	Fire Tank	Mill Water		Area drains to stormwater sewer
Tank Farm	Weak Black Liquor	weak black Liquor	588,000	Tank is located within an earthen berm
Tank Farm	Weak Black Liquor (2)	Weak black liquor	900,000	Tank is located within an earthen berm
Tank Farm	Empty storage tank	N/A	125,000	Tank is located within an earthen berm
WWTP	Nutrient	Urea-phosphoric Acid	6,000	Tank is located within concrete containment.
WWTP	Primary Clarifier	Industrial Wastewater	853,000	Area drains to stormwater sewer
WWTP	Propane Tank	Liquified propane	500	N/A
WWTP	Secondary Clarifier	Industrial Wastewater	1,700,000	Area drains to WWTP and stormwater
WWTP	Sludge Tanks (2)	Industrial Wastewater Sludge	100,000 ea	Tank equipped with high level interlocks. Area drains to stormwater
WWTP	Lime Silo	Quicklime	50 tons	Tank equipped with high level interlocks. Area drains to WWTP
Amherst Landfill	Diesel Tank	Diesel fuel	2000	Double walled tank with curbing

## VPDES SEWAGE SLUDGE PERMIT APPLICATION FORM

## SCREENING INFORMATION

This application is divided into sections. Sections A pertain to all applicants. The applicability of Sections B, C and D depend on your facility's sewage sludge use or disposal practices. The information provided on this page will help you determine which sections to fill out.

1. All applicants must complete Section A (General Information).

2. Will this facility generate sewage sludge? ☒ Yes ☐ No

Will this facility derive a material from sewage sludge? ☐ Yes ☒ No

If you answered Yes to either, complete Section B (Generation Of Sewage Sludge Or Preparation Of A Material Derived From Sewage Sludge).

3. Will this facility apply sewage sludge to the land? ☐ Yes ☒ No

Will sewage sludge from this facility be applied to the land? ☐ Yes ☒ No

If you answered No to both questions above, skip Section C.

If you answered Yes to either, answer the following three questions:

a. Will the sewage sludge from this facility meet the ceiling concentrations, pollutant concentrations, Class A pathogen reduction requirements and one of the vector attraction reduction requirements 1-8, as identified in the instructions?  
☐ Yes ☐ No

b. Will sewage sludge from this facility be placed in a bag or other container for sale or give-away for application to the land? ☐ Yes ☐ No

c. Will sewage sludge from this facility be sent to another facility for treatment or blending? ☐ Yes ☐ No

If you answered No to all three, complete Section C (Land Application Of Bulk Sewage Sludge).

If you answered Yes to a, b or c, skip Section C.

4. Do you own or operate a surface disposal site? ☐ Yes ☒ No

If Yes, complete Section D (Surface Disposal).

## SECTION A. GENERAL INFORMATION

All applicants must complete this section.

## 1. Facility Information.

- a. Facility name: GP Big Island, LLC
- b. Contact person: Timothy H. Pierce  
Title: EHS Manager  
Phone: (434) 299-7386
- c. Mailing address:  
Street or P.O. Box: P.O. Box 40  
City or Town: Big Island State: VA Zip: 24526
- d. Facility location:  
Street or Route #: 9363 Lee Jackson Highway  
County: Bedford  
City or Town: Big Island State: VA Zip: 24526
- e. Is this facility a Class I sludge management facility?    Yes X No
- f. Facility design flow rate: 0.04 mgd
- g. Total population served: 200 equivalent population (estimated)
- h. Indicate the type of facility:  
   Publicly owned treatment works (POTW)  
X Privately owned treatment works  
   Federally owned treatment works  
   Blending or treatment operation  
   Surface disposal site  
   Other (describe):

## 2. Applicant Information. If the applicant is different from the above, provide the following:

- a. Applicant name: Same
- b. Mailing address:  
Street or P.O. Box:  
City or Town: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- c. Contact person:  
Title:  
Phone: (    )
- d. Is the applicant the owner or operator (or both) of this facility?  
X owner X operator
- e. Should correspondence regarding this permit be directed to the facility or the applicant? (Check one)  
X facility    applicant

## 3. Permit Information.

- a. Facility's VPDES permit number (if applicable): VA0003026
- b. List on this form or an attachment, all other federal, state or local permits or construction approvals received or applied for that regulate this facility's sewage sludge management practices:  
Permit Number: \_\_\_\_\_ Type of Permit: \_\_\_\_\_  
N/A N/A

4. Indian Country. Does any generation, treatment, storage, application to land or disposal of sewage sludge from this facility occur in Indian Country?    Yes X No If yes, describe:

5. Topographic Map. Provide a topographic map or maps (or other appropriate maps if a topographic map is unavailable) that shows the following information. Maps should include the area one mile beyond all property boundaries of the facility: See attached Fig. 1-1.
- Location of all sewage sludge management facilities, including locations where sewage sludge is generated, stored, treated, or disposed.
  - Location of all wells, springs, and other surface water bodies listed in public records or otherwise known to the applicant within 1/4 mile of the property boundaries.
6. Line Drawing. Provide a line drawing and/or a narrative description that identifies all sewage sludge processes that will be employed during the term of the permit including all processes used for collecting, dewatering, storing, or treating sewage sludge, the destination(s) of all liquids and solids leaving each unit, and all methods used for pathogen reduction and vector attraction reduction. See attached copy of sludge management plan.
7. Contractor Information. Are any operational or maintenance aspects of this facility related to sewage sludge generation, treatment, use or disposal the responsibility of a contractor? ☒ Yes ☐ No  
If yes, provide the following for each contractor (attach additional pages if necessary).  
Name: Wilson's Septic Tank Service  
Mailing address:  
Street or P.O. Box: P.O. Box 4619  
City or Town: Lynchburg State: VA Zip: 24502  
Phone: (434) 239-4387  
Contractor's Federal, State or Local Permit Number(s) applicable to this facility's sewage sludge: VA 87-214-14H
- If the contractor is responsible for the use and/or disposal of the sewage sludge, provide a description of the service to be provided to the applicant and the respective obligations of the applicant and the contractor(s).
8. Pollutant Concentrations. Using the table below or a separate attachment, provide sewage sludge monitoring data for the pollutants which limits in sewage sludge have been established in 9 VAC 25-31-10 et seq. for this facility's expected use or disposal practices. All data must be based on three or more samples taken at least one month apart and must be no more than four and one-half years old. Not required.

POLLUTANT	CONCENTRATION (mg/kg dry weight)	SAMPLE DATE	ANALYTICAL METHOD	DETECTION LEVEL FOR ANALYSIS
Arsenic				
Cadmium				
Chromium				
Copper				
Lead				
Mercury				
Molybdenum				
Nickel				
Selenium				
Zinc				

9. Certification. Read and submit the following certification statement with this application. Refer to the instructions to determine who is an officer for purposes of this certification. Indicate which parts of the application you have completed and are submitting:

☒ Section A (General Information)  
☒ Section B (Generation of Sewage Sludge or Preparation of a Material Derived from Sewage Sludge)  
☐ Section C (Land Application of Bulk Sewage Sludge)  
☐ Section D (Surface Disposal)

**FACILITY NAME:** GP Big Island, LLC

**VPDES PERMIT NUMBER:** VA0003026

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title Eldon G. Brammer Vice President Manufacturing, GP Big Island, LLC

Signature Eldon Brammer Date Signed 9/30/14

Telephone number (434) 299-5911

Upon request of the department, you must submit any other information necessary to assess sewage sludge use or disposal practices at your facility or identify appropriate permitting requirements.



**SECTION B. GENERATION OF SEWAGE SLUDGE OR PREPARATION  
OF A MATERIAL DERIVED FROM SEWAGE SLUDGE**

Complete this section if your facility generates sewage sludge or derives a material from sewage sludge

1. Amount Generated On Site.  
Total dry metric tons per 365-day period generated at your facility: 2.74 dry metric tons
2. Amount Received from Off Site. If your facility receives sewage sludge from another facility for treatment, use or disposal, provide the following information for each facility from which sewage sludge is received. If you receive sewage sludge from more than one facility, attach additional pages as necessary.
  - a. Facility name: N/A
  - b. Contact Person:  
Title:  
Phone (   )
  - c. Mailing address:  
Street or P.O. Box:  
City or Town: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
  - d. Facility Address:  
(not P.O. Box)
  - e. Total dry metric tons per 365-day period received from this facility: \_\_\_\_\_ dry metric tons
  - f. Describe, on this form or on another sheet of paper, any treatment processes known to occur at the off-site facility, including blending activities and treatment to reduce pathogens or vector attraction characteristics:
3. Treatment Provided at Your Facility.
  - a. Which class of pathogen reduction is achieved for the sewage sludge at your facility?  
   Class A       Class B    X Neither or unknown
  - b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge: none
  - c. Which vector attraction reduction option is met for the sewage sludge at your facility?  
   Option 1 (Minimum 38 percent reduction in volatile solids)  
   Option 2 (Anaerobic process, with bench-scale demonstration)  
   Option 3 (Aerobic process, with bench-scale demonstration)  
   Option 4 (Specific oxygen uptake rate for aerobically digested sludge)  
   Option 5 (Aerobic processes plus raised temperature)  
   Option 6 (Raise pH to 12 and retain at 11.5)  
   Option 7 (75 percent solids with no unstabilized solids)  
   Option 8 (90 percent solids with unstabilized solids)  
X None or unknown
  - d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge: Sludge is pumped from aerated holding tank into truck and discharged directly into City of Lynchburg WWTP.
  - e. Describe, on this form or another sheet of paper, any other sewage sludge treatment activities, including blending, not identified in a - d above: none
4. Preparation of Sewage Sludge Meeting Ceiling and Pollutant Concentrations, Class A Pathogen Requirements and One of Vector Attraction Reduction Options 1-8 (EQ Sludge). N/A  
(If sewage sludge from your facility does not meet all of these criteria, skip Question 4.)
  - a. Total dry metric tons per 365-day period of sewage sludge subject to this section that is applied to the land:  
\_\_\_\_\_ dry metric tons
  - b. Is sewage sludge subject to this section placed in bags or other containers for sale or give-away?  
   Yes    No

5. Sale or Give-Away in a Bag or Other Container for Application to the Land. N/A

(Complete this question if you place sewage sludge in a bag or other container for sale or give-away prior to land application. Skip this question if sewage sludge is covered in Question 4.)

- a. Total dry metric tons per 365-day period of sewage sludge placed in a bag or other container at your facility for sale or give-away for application to the land: \_\_\_\_\_ dry metric tons
- b. Attach, with this application, a copy of all labels or notices that accompany the sewage sludge being sold or given away in a bag or other container for application to the land.

## 6. Shipment Off Site for Treatment or Blending.

(Complete this question if sewage sludge from your facility is sent to another facility that provides treatment or blending. This question does not apply to sewage sludge sent directly to a land application or surface disposal site. Skip this question if the sewage sludge is covered in Questions 4 or 5. If you send sewage sludge to more than one facility, attach additional sheets as necessary.)

- a. Receiving facility name: City of Lynchburg Regional Wastewater Treatment Plant
- b. Facility contact: Alvin Rucker  
Title: Plant Superintendent  
Phone: (434) 455-6240
- c. Mailing address:  
Street or P.O. Box: 2301 Concord Turnpike  
City or Town: Lynchburg State: VA Zip: 24504
- d. Total dry metric tons per 365-day period of sewage sludge provided to receiving facility: 2.74 dry metric tons
- e. List, on this form or an attachment, the receiving facility's VPDES permit number as well as the numbers of all other federal, state or local permits that regulate the receiving facility's sewage sludge use or disposal practices:  
Permit Number: VA0024970 Type of Permit: VPDES

- f. Does the receiving facility provide additional treatment to reduce pathogens in sewage sludge from your facility? X Yes \_\_\_ No

Which class of pathogen reduction is achieved for the sewage sludge at the receiving facility?

\_\_\_ Class A X Class B \_\_\_ Neither or unknown

Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce pathogens in sewage sludge: Lime stabilization

- g. Does the receiving facility provide additional treatment to reduce vector attraction characteristics of the sewage sludge? X Yes \_\_\_ No

Which vector attraction reduction option is met for the sewage sludge at the receiving facility?

- \_\_\_ Option 1 (Minimum 38 percent reduction in volatile solids)  
\_\_\_ Option 2 (Anaerobic process, with bench-scale demonstration)  
\_\_\_ Option 3 (Aerobic process, with bench-scale demonstration)  
\_\_\_ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)  
\_\_\_ Option 5 (Aerobic processes plus raised temperature)  
X Option 6 (Raise pH to 12 and retain at 11.5)  
\_\_\_ Option 7 (75 percent solids with no unstabilized solids)  
\_\_\_ Option 8 (90 percent solids with unstabilized solids)  
\_\_\_ None unknown

Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge: Lime stabilization

- h. Does the receiving facility provide any additional treatment or blending not identified in f or g above?

\_\_\_ Yes X No

If yes, describe, on this form or another sheet of paper, the treatment processes not identified in f or g above:

- i. If you answered yes to f, g or h above, attach a copy of any information you provide to the receiving facility



9. Incineration. N/A

(Complete Question 9 if sewage sludge from your facility is fired in a sewage sludge incinerator.)

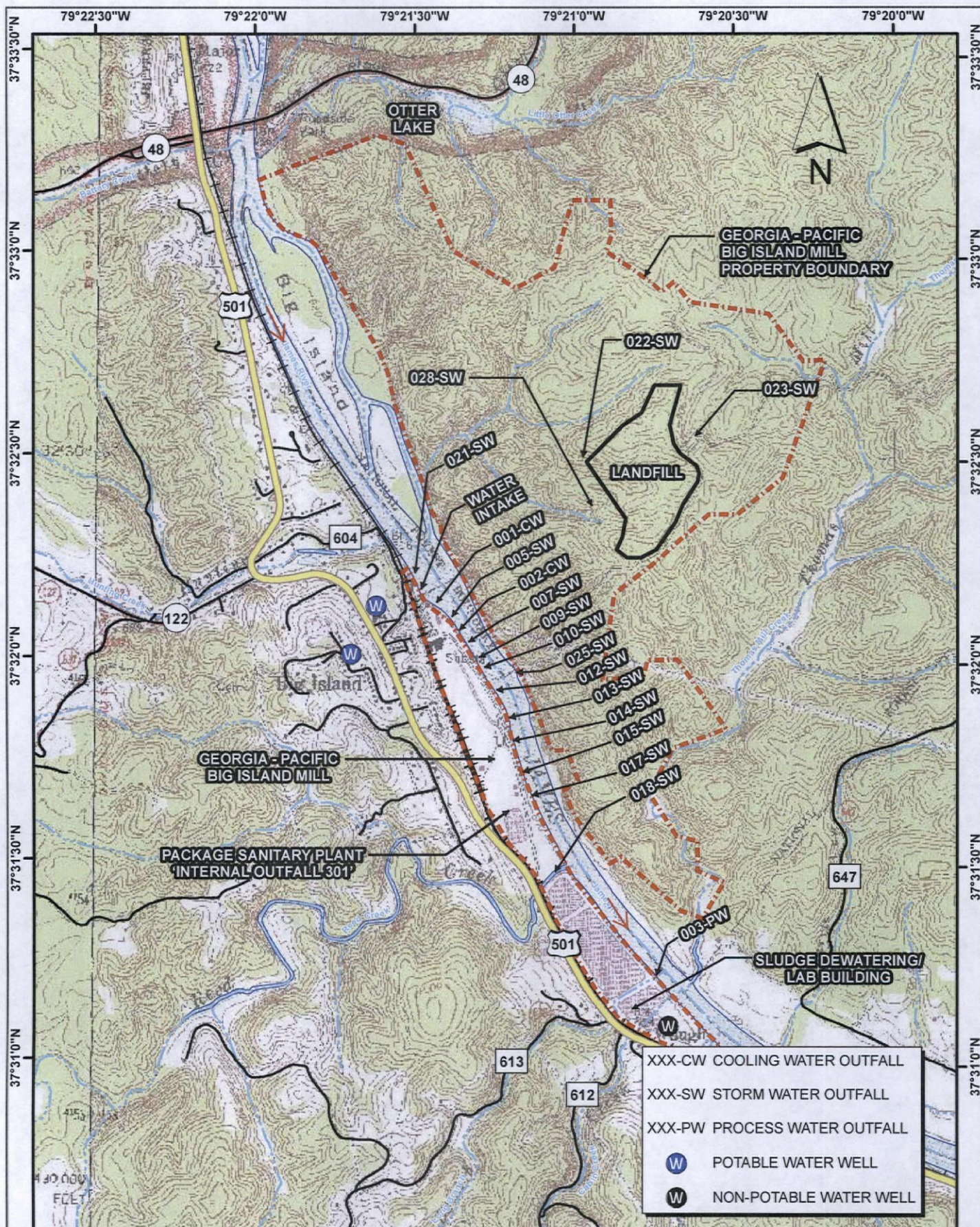
- a. Total dry metric tons per 365-day period of sewage sludge from your facility fired in a sewage sludge incinerator: \_\_\_\_\_ dry metric tons
- b. Do you own or operate all sewage sludge incinerators in which sewage sludge from your facility is fired?  
\_\_\_\_ Yes \_\_\_\_ No  
If no, answer questions c - g for each sewage sludge incinerator that you do not own or operate. If you send sewage sludge to more than one sewage sludge incinerator, attach additional pages as necessary.
- c. Incinerator name or number:
- d. Contact person:  
Title:  
Phone: (    )  
Contact is: \_\_\_\_ Incinerator Owner \_\_\_\_ Incinerator Operator
- e. Mailing address.  
Street or P.O. Box:  
City or Town: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- f. Total dry metric tons per 365-day period of sewage sludge from your facility fired in this sewage sludge incinerator: \_\_\_\_\_ dry metric tons
- g. List on this form or an attachment the numbers of all other federal, state or local permits that regulate the firing of sewage sludge at this incinerator:  
Permit Number: \_\_\_\_\_ Type of Permit: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. Disposal in a Municipal Solid Waste Landfill. N/A

(Complete Question 10 if sewage sludge from your facility is placed on a municipal solid waste landfill. Provide the following information for each municipal solid waste landfill on which sewage sludge from your facility is placed. If sewage sludge is placed on more than one municipal solid waste landfill, attach additional pages as necessary.)

- a. Landfill name:
- b. Contact person:  
Title:  
Phone: (    )  
Contact is: \_\_\_\_ Landfill Owner \_\_\_\_ Landfill Operator
- c. Mailing address.  
Street or P.O. Box:  
City or Town: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- d. Landfill location.  
Street or Route #:  
County:  
City or Town: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_
- e. Total dry metric tons per 365-day period of sewage sludge placed in this municipal solid waste landfill:  
\_\_\_\_\_ dry metric tons
- f. List, on this form or an attachment, the numbers of all federal, state or local permits that regulate the operation of this municipal solid waste landfill:  
Permit Number: \_\_\_\_\_ Type of Permit: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- g. Does sewage sludge meet applicable requirements in the Virginia Solid Waste Management Regulation, 9 VAC 20-80-10 et seq., concerning the quality of materials disposed in a municipal solid waste landfill?  
\_\_\_\_ Yes \_\_\_\_ No
- h. Does the municipal solid waste landfill comply with all applicable criteria set forth in the Virginia Solid Waste Management Regulation, 9 VAC 20-80-10 et seq.? \_\_\_\_ Yes \_\_\_\_ No
- i. Will the vehicle bed or other container used to transport sewage sludge to the municipal solid waste landfill be watertight and covered? \_\_\_\_ Yes \_\_\_\_ No  
Show the haul route(s) on a location map or briefly describe the route below and indicate the days of the week and time of the day sewage sludge will be transported.





IF THIS DRAWING IS A REDUCTION  
GRAPHIC SCALE MUST BE USED

U.S. Geological Survey. 1:24,000. 7.5 Minute Series

2,000 0 2,000 Feet

**W**  
**W**  
**ASSOCIATES**

P.O. Box 4119 1402 Greenbriar Place  
Lynchburg, VA 24502 Charleston, VA 22901  
Phone: 434.316.6060 Phone: 434.984.2700  
www.wvaassociates.net

DRAWN BY: CLP

REVIEWED BY: HFW

FILE NAME:

USGSMAP.mxd

PROJECT NUMBER:

209078.00

PROJECT:

**GEORGIA - PACIFIC  
BIG ISLAND PAPER MILL**

TITLE:

**FIGURE 1-1  
GP ~ OUTFALLS**

Scale:

1" = 2,000 FT

Date:

11/17/09

Figure:

3 - 1



**SLUDGE DISPOSAL PLAN FOR  
GP BIG ISLAND, LLC  
SANITARY TREATMENT PLANT**

**Aerated Sludge Holding Tank:**

Volume = 1070 c.f. or 8000 gallons

Aeration is by diffused aeration providing 32 cfm.

**QUANTITY & QUALITY OF SLUDGE**

Based on the flows to the treatment system, and system operations at the package plant, the operator will waste sludge as needed to maintain operations. On average 7,500 gallons of sludge may be generated in a month's time. This quantity may also change depending on system operation or maintenance being performed.

If sludge monitoring/analysis is not performed to classify the sludge, it will be assumed that the sludge will meet the requirements of Class B sludge as defined in the Commonwealth of Virginia Sewage Regulations, Section 25.07.05 as the sludge is not totally stabilized. Partially digested waste activated sludge is pumped from the aerated holding tank into a tank truck and is discharged into the City of Lynchburg Wastewater treatment plant.

**SLUDGE REMOVAL**

The sludge holding tank has a capacity of 8,000 gallons. Sludge may be pumped from the tank around 12 times per year. Visual inspection by the operator will determine when pumping must be accomplished. The exact day of the sludge pumping will be noted in plant records.

**SLUDGE HAULING**

Sludge pumping and hauling will be accomplished by a reputable septic tank service company to be determined at the time of pumping. Companies that will be considered based on availability today are:

Wilson Septic Tank Service  
P.O. Box 4619  
Lynchburg, VA 24502

It is explicitly understood that GP Big Island, LLC will have final responsibility to insure that the sludge is disposed correctly.

The hauling contractor will haul the sludge in a non-spill, watertight tank mounted on a truck normally used for such operation. They will haul it to the City of Lynchburg Wastewater Treatment Plant owned by the City of Lynchburg where it will be delivered to the treatment site in accordance with the attached agreement.

## **TRANSPORTATION ROUTE & TIMES**

The normal route used for hauling the sludge is shown on the attached map and as briefly described below. The approximate distance from the GP facility to the Lynchburg WWTP is twenty miles.

Proceed south on Highway 501 and then turn east on Boonsboro Road/Rivermont Avenue. Turn left on 5<sup>th</sup> street, then go east on Commerce St, and north on Washington St which becomes Concord Turnpike. City of Lynchburg Wastewater Treatment Plant is 2301 Concord Turnpike.

## **SLUDGE TREATMENT**

After reaching the City of Lynchburg Sewage Treatment Plant, the hauling contractor will pay the City of Lynchburg a set fee per gallon of sludge delivered. The contractor will be responsible for meeting all requirements placed on him by the City of Lynchburg which include:

1. Checking and maintaining the proper pH before dumping of approximately 7.0.
2. Cleanup of any spillage during delivery or performing any other cleanup operations deemed necessary by the City of Lynchburg due to the delivery of sludge.

After delivery of the sludge, the City of Lynchburg will be solely responsible for final disposal of our sludge.

## **SLUDGE DISPOSAL**

Land application of sludge shall be in accordance with the Virginia Sewage Regulations adopted jointly by the State Health Department and Water Control Board. Direct land application of Class B sludge is not permitted. Identification of sludge as Class A must be confirmed by approved monitoring and testing.



## THE CITY OF LYNCHBURG, VIRGINIA

2301 Concord Turnpike, Lynchburg, VA 24504

[www.lynchburgva.gov](http://www.lynchburgva.gov)

TEL: 434-455-6240

FAX: 434-847-1750

DEPARTMENT OF UTILITIES  
REGIONAL WASTEWATER TREATMENT PLANT

December 10, 2009

### Contract Truck Hauled Waste

Customer Name/Address: **GP Big Island, LLC**  
**9363 Lee Jackson Hwy**  
**Big Island, Virginia 24526**

Contract Hauled Waste Disposal Application Date: **December 4, 2009**

Type(s) of wastes approved for disposal at the Lynchburg Wastewater Treatment Facility: **Digested sludge from sanitary sewage extended aeration package plant.**

Disposal provisions are as follows:

#### **A. Transportation and Identification of Wastewater**

1. Waste will be transported to the treatment facility using haulers permitted by the Lynchburg Wastewater Treatment Facility.
2. The waste will be accompanied by a signed manifest form, identifying the source of the wastewater. The signature on the manifest form must be that of a responsible employee of **GP Big Island, LLC**.

#### **B. Evaluation of Wastewater Strengths and Acceptability**

1. One (1) sample for ten (10) or less loads per month, or ten (10%) of the total loads received at the treatment facility per month will be analyzed for Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and Total Suspended Solids (TSS). All loads will be tested for pH.

2. Loads exhibiting any of the characteristics prohibited in Section F, Industrial Discharges and also with any applicable provisions of Federal or State laws or regulations will not be accepted.
3. The City reserves the right to require additional testing at the expense of the **GP Big Island, LLC** if such testing is deemed necessary by the City.

#### **C. Billing**

1. Charges for BOD and TSS will be based on the current surcharge rate per hundred (100) pounds for BOD and TSS, as established by Lynchburg City Council. The maximum volume capacity of any vehicle used to transport the waste will be used for the volume of wastewater. No charge less than the base septage rate will apply to any load regardless of strength.
2. An administrative charge of fifteen percent will be assessed to the monthly bill when the treatment charge exceeds the minimum load charge.
3. Monthly bills not paid by the due date will result in suspension of discharge services until such bill has been paid at Collections in city Hall.
4. When Lynchburg City Council changes the surcharge or base septage rates, billing adjustments will begin on the effective date mandated by the Council.

#### **D. Right to Deny Services**

1. A State or Federal Agency informs the City that the effluent from Lynchburg's Regional Wastewater Treatment Plant is no longer of a quality permitted for discharge into the James River.
2. Noncompliance with discharge regulations.
3. A determination that the further receipt of this wastewater endangers human health or the environment, causes interference to the wastewater treatment facilities or causes the City to violate any condition of its VPDES permit.
4. When the Lynchburg Wastewater Facility reaches 85% of its total capacity for BOD and/or TSS.

## **E. General Restrictions**

**Wastes with the following characteristics will not be discharged:**

1. Wastewater from any industrial or commercial source except where conditions outlined in Section F have been met, and written permission has been granted by the City of Lynchburg.
2. Wastewater containing fats, wax, grease, or oils of petroleum origin and or excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperatures between thirty-two (32°F) degrees and one hundred forty (140°F) degrees Fahrenheit (0°degrees and 60° degrees Centigrade).
3. Containing any gasoline, benzene, naphtha, fuel oil or other flammable or explosive liquids, solids, or gases.
4. Waters or wastes which are not amenable to treatment or reduction by the wastewater treatment processes employed, or are amenable to treatment only to such degree that the wastewater treatment plant effluent cannot meet the requirements of agencies having jurisdiction over discharge to the receiving waters.
5. Material considered a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA)

## **F. Industrial Discharges**

1. For the purposes of definition, an Industrial Source is any nonresidential user identified in Division A, B, D, E, or I of the Standard Industrial Classification Manual, or any user which discharges wastewater containing toxic or poisonous substances, or any substance(s) which cause(s) interference in the wastewater facilities.

In order for the Lynchburg Wastewater Treatment Facility to accept a discharge from an Industrial Source, the following conditions must be met:

Any person desiring to dispose of wastes from an Industrial Source into the Wastewater Treatment Facility, through a waste hauler, shall request, through a written application to the Utilities Director, permission to discharge these wastes. The application shall contain sufficient information to adequately characterize the waste, shall include a process flow diagram, and shall specifically identify the truck hauler to be contracted. The designated waste hauler must possess a valid Septage Hauler Discharge Permit. One-time special discharges must have permission from designated WWTP personnel and 24 hours notice. Discharge of Industrial Wastes will be subject to the following criteria:



**a. Hazardous Waste**

The waste must not exhibit any of the characteristics which designate a waste as hazardous under the Resource Conservation and Recovery Act (RCRA). Those characteristics are as follows:

*Corrosivity:* Any liquid wastes having a pH lower than 2.0 or greater than 12.5, or which corrodes steel at a rate greater than 6.35 millimeters per year at a temperature of 55° C.

*Ignitability:* A liquid with a flash point less than 140° F, an ignitable compressed gas, an oxidizer, or a substance that is capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes under standard temperature and pressure conditions.

*Reactivity:* Any wastes which are normally unstable and readily undergoes violent change without detonating, which reacts violently with water, forms potentially explosive mixtures with water, or which generates toxic gases, vapors, or fumes when mixed with water.

*Toxicity Characterization Leaching Procedure (TCLP toxicity):* Any waste which fail the TCLP procedure as defined by the EPA.

**b. Categorical Industrial Wastes**

Wastes from Federal Categorical Industries, as designated in 40 CFR 403, under the Clean Water Act, must meet the same limitations as specified for that categorical type of waste under Federal, State, and Local regulations as they pertain to discharge into the Lynchburg Wastewater Treatment Facilities.

**c. Other Industrial, Commercial, or Non Household Wastes**

Requests for the discharge of hauled wastes from, but not limited to, groundwater contamination from underground storage tanks or other underground leaks, leachate from landfill operations, sludges from wastewater treatment operations, agricultural runoff waters or any other surface water runoff, wastes from commercial food processing activities, rendering wastes, contaminated or rejected commercial products or other obsolete commercial raw materials, machine tooling lubricants, commercial cleaning solutions, and/or antifreezes will be evaluated using best guidance information available, will be subject to the best professional management practices, and will require prior written approval from the Utilities Director before discharge can be accepted.

**d. Additional Requirements**

It shall be the standard practice that hauled Industrial Wastes shall not be mixed with any other wastes prior to discharge at the Lynchburg Wastewater Treatment Facility.



Directions to 2301 Concord Turnpike,  
Lynchburg, VA 24501  
18.6 mi – about 36 mins

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## DELEGATION AND AUTHORIZATION

September 30, 2014

This is to confirm that the position of EHS Manager or Environmental Manager performs the duties of the manager of the environmental compliance programs for this facility and is responsible for the overall operations of the wastewater treatment facility. As such, the person(s) filling these positions are authorized to sign VPDES Permit DMR forms, and other reports and permit information related to environmental matters for all operations of the GP Big Island, LLC facility. This authority to sign such documents has been assigned or delegated to the above referenced positions in accordance with the procedures of Georgia-Pacific LLC.

A handwritten signature in black ink, reading "Eldon Brammer", written over a horizontal line.

Eldon G. Brammer  
Vice President – Manufacturing  
GP Big Island, LLC

**SAFETY DATA SHEET**

PRODUCT

**CONQUOR® CNQR3588**

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME : CONQUOR® CNQR3588

APPLICATION : CORROSION INHIBITOR

COMPANY IDENTIFICATION :  
Nalco Company  
1601 W. Diehl Road  
Naperville, Illinois  
60563-1198

EMERGENCY TELEPHONE NUMBER(S) : (800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING

HEALTH : 3 / 3\* FLAMMABILITY : 2 / 2 INSTABILITY : 0 / 0 OTHER :  
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme \* = Chronic Health Hazard

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Cyclohexylamine	108-91-8	10.0 - 30.0
Methoxypropylamine	5332-73-0	10.0 - 30.0
Diethyl-Hydroxyl-Amine	3710-84-7	1.0 - 5.0

**3. HAZARDS IDENTIFICATION****\*\*EMERGENCY OVERVIEW\*\*****DANGER**

Corrosive. Combustible. May cause tissue damage. Harmful if swallowed. May cause sensitization by skin contact. Keep away from heat. Keep away from sources of ignition - No smoking. Keep container tightly closed. Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Use a mild soap if available.

Wear a face shield. Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots.

Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve ammonia under fire conditions.

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin, Inhalation



## SAFETY DATA SHEET

### PRODUCT

**CONQUOR® CNQR3588**

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#### HUMAN HEALTH HAZARDS - ACUTE :

##### EYE CONTACT :

Corrosive. Will cause eye burns and permanent tissue damage.

##### SKIN CONTACT :

Corrosive; causes permanent skin damage. May cause sensitization by skin contact.

##### INGESTION :

Corrosive; causes chemical burns to the mouth, throat and stomach. Harmful if swallowed.

##### INHALATION :

Elevated temperatures or mechanical action may form vapors, mists or fumes which may be irritating to the eyes, nose, throat and lungs. Vapors may have a strong offensive odor which may cause sensory response including headache, nausea and vomiting.

#### AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

#### HUMAN HEALTH HAZARDS - CHRONIC :

Prolonged exposure to cyclohexylamine in the diet has produced reproductive effects in rats. The relevance to humans is unknown.

## 4. FIRST AID MEASURES

##### EYE CONTACT :

Immediately flush eye with water for at least 15 minutes while holding eyelids open. PROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Get immediate medical attention.

##### SKIN CONTACT :

Immediately flush with plenty of water for at least 15 minutes. Use a mild soap if available. For a large splash, flood body under a shower. Get immediate medical attention. Contaminated clothing, shoes, and leather goods must be discarded or cleaned before re-use.

##### INGESTION :

Get immediate medical attention. DO NOT INDUCE VOMITING. If conscious, washout mouth and give water to drink.

##### INHALATION :

Remove to fresh air, treat symptomatically. Get medical attention.

##### NOTE TO PHYSICIAN :

Probable mucosal damage may contraindicate the use of gastric lavage. Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

## 5. FIRE FIGHTING MEASURES

FLASH POINT : 158 °F / 70 °C ( PMCC )





## SAFETY DATA SHEET

### PRODUCT

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#### EXTINGUISHING MEDIA :

Dry powder, Carbon dioxide, Foam, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material.  
Keep containers cool by spraying with water.

#### UNSUITABLE EXTINGUISHING MEDIA :

Do not use water unless flooding amounts are available.

#### FIRE AND EXPLOSION HAZARD :

Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions. May evolve ammonia under fire conditions.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

## 6. ACCIDENTAL RELEASE MEASURES

#### PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Keep people away from and upwind of spill/leak. Ventilate spill area if possible. Remove sources of ignition. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

#### METHODS FOR CLEANING UP :

**SMALL SPILLS:** Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

#### ENVIRONMENTAL PRECAUTIONS :

Prevent material from entering sewers or waterways.

## 7. HANDLING AND STORAGE

#### HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Do not use, store, spill or pour near heat, sparks or open flame. Do not mix with acids.

#### STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed. Store away from heat and sources of ignition. Have appropriate fire extinguishers available in and near the storage area. Connections must be grounded to avoid



## SAFETY DATA SHEET

### PRODUCT

**CONQUOR® CNQR3588**

### EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

electrical charges. Store separately from oxidizers. Store separately from acids. Amine and sulphite products should not be stored within close proximity or resulting vapors may form visible airborne particles.

#### SUITABLE CONSTRUCTION MATERIAL :

Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### OCCUPATIONAL EXPOSURE LIMITS :

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Substance(s)	Category:	ppm	mg/m3	Non-Standard Unit
Cyclohexylamine	ACGIH/TWA	10		
Methoxypropylamine	WEEL/TWA	5		
	WEEL/STEL	15		

#### ENGINEERING MEASURES :

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.

#### RESPIRATORY PROTECTION :

Where concentrations in air may exceed the limits given in this section or when significant mists, vapors, aerosols, or dusts are generated, an approved air purifying respirator equipped with suitable filter cartridges is recommended. Consult the respirator / cartridge manufacturer data to verify the suitability of specific devices. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

#### HAND PROTECTION :

When handling this product, the use of chemical gauntlets is recommended. The choice of work glove depends on work conditions and what chemicals are handled. Please contact the PPE manufacturer for advice on what type of glove material may be suitable. Gloves should be replaced immediately if signs of degradation are observed.

#### SKIN PROTECTION :

Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots. A full slicker suit is recommended if gross exposure is possible.

#### EYE PROTECTION :

Wear a face shield with chemical splash goggles.

#### HYGIENE RECOMMENDATIONS :

Use good work and personal hygiene practices to avoid exposure. Eye wash station and safety shower are necessary. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

**SAFETY DATA SHEET****PRODUCT****CONQUOR® CNQR3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****9. PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE	Liquid
APPEARANCE	Clear Light yellow
ODOR	Amine
SPECIFIC GRAVITY	0.949 - 0.961
DENSITY	7.9 - 8.01 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	12.8 - 13.0
INITIAL BOILING POINT	205 °F /
VAPOR PRESSURE	24.8 mm Hg
VOC CONTENT	46 %

Note: These physical properties are typical values for this product and are subject to change.

**10. STABILITY AND REACTIVITY**

**STABILITY :**  
Stable under normal conditions.

**HAZARDOUS POLYMERIZATION :**  
Hazardous polymerization will not occur.

**CONDITIONS TO AVOID :**  
Heat and sources of ignition including static discharges.

**MATERIALS TO AVOID :**  
Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Avoid contact with SO<sub>2</sub> or acidic bisulfite products, which may react to form visible airborne amine salt particles. Certain amines in contact with nitrous acid, organic or inorganic nitrites or atmospheres with high nitrous oxide concentrations may produce N-nitrosamines, many of which are cancer-causing agents to laboratory animals.

**HAZARDOUS DECOMPOSITION PRODUCTS :**  
Under fire conditions: Oxides of carbon, Oxides of nitrogen, ammonia

**11. TOXICOLOGICAL INFORMATION**

No toxicity studies have been conducted on this product.

**SENSITIZATION :**  
Repeated or prolonged contact may cause skin sensitization.

**SAFETY DATA SHEET****PRODUCT****CONQUOR® CNQR3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****CARCINOGENICITY :**

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

**REPRODUCTIVE EFFECTS :**

Prolonged exposure to cyclohexylamine in the diet has produced reproductive effects in rats. The relevance to humans is unknown.

**MUTAGENICITY :**

A mutagenicity test battery on cyclohexylamine was inconclusive. In a short-term test, cyclohexylamine caused mutation in human white blood cells. A bacterial mutagenicity (Ames) bioassay was negative for methoxypropylamine.

**12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

**ACUTE FISH RESULTS :**

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	220 mg/l	Product

**ACUTE INVERTEBRATE RESULTS :**

Species	Exposure	LC50	EC50	Test Descriptor
Ceriodaphnia dubia	48 hrs	157 mg/l		Product
Daphnia magna	48 hrs	274 mg/l		Product

**CHRONIC FISH RESULTS :**

Species	Exposure	NOEC / LOEC	End Point	Test Descriptor
Fathead Minnow	7 Days	50 mg/l / 100 mg/l	Growth	Product

**CHRONIC INVERTEBRATE RESULTS :**

Species	Test Type	NOEC / LOEC	End Point	Test Descriptor
Ceriodaphnia dubia	3 Brood	12.5 mg/l / 25 mg/l	Reproduction	Product

**PERSISTENCY AND DEGRADATION :**

Chemical Oxygen Demand (COD) : 1,100,000 mg/l

**Biological Oxygen Demand (BOD) :**

Incubation Period	Value	Test Descriptor
5 d	11,200 mg/l	Product

**MOBILITY :**

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is

**SAFETY DATA SHEET****PRODUCT****CONQUOR® CNQR3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible.

If released into the environment, see CERCLA/SUPERFUND in Section 15.

**13. DISPOSAL CONSIDERATIONS**

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste: D002

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

**14. TRANSPORT INFORMATION**

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

**LAND TRANSPORT :**

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, METHOXYPROPYLAMINE
UN/ID No :	UN 2735
Hazard Class - Primary :	8
Packing Group :	III
Flash Point :	70 °C / 158 °F
Reportable Quantity (per package) :	470 lbs
RQ Component :	Methoxypropylamine

**AIR TRANSPORT (ICAO/IATA) :**



**SAFETY DATA SHEET****PRODUCT****CONQUOR® CNQR3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, METHOXYPROPYLAMINE
UN/ID No :	UN 2735
Hazard Class - Primary :	8
Packing Group :	III
Reportable Quantity (per package) :	470 lbs
RQ Component :	Methoxypropylamine

**MARINE TRANSPORT (IMDG/IMO) :**

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, METHOXYPROPYLAMINE
UN/ID No :	UN 2735
Hazard Class - Primary :	8
Packing Group :	III

**15. REGULATORY INFORMATION**

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this information.

**NATIONAL REGULATIONS, USA :****OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :**

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Cyclohexylamine : Corrosive, Flammable, Prolonged exposure to cyclohexylamine in the diet has produced reproductive effects in rats. The relevance to humans is unknown.

Methoxypropylamine : Corrosive, Flammable, Dermal Sensitizer

Diethyl-Hydroxyl-Amine : Irritant, Combustible.

**CERCLA/SUPERFUND, 40 CFR 302 :**

This product contains the following Reportable Quantity (RQ) Substance. Also listed is the RQ for the product. If a reportable quantity of product is released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D.C. (1-800-424-8802).

<u>RQ Substance</u>	<u>RQ</u>
Methoxypropylamine	470 lbs

**SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :**

**SAFETY DATA SHEET****PRODUCT****CONQUOR® CNQR3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :**

This product contains the following substance(s) which is listed in Appendix A and B as an Extremely Hazardous Substance. Listed below are the statutory Threshold Planning Quantity (TPQ) for the substance(s) and the Reportable Quantity (RQ) of the product.

<u>Extremely Hazardous Substance</u>	<u>TPQ</u>	<u>RQ</u>
Cyclohexylamine	10,000 lbs	47,300 lbs

**SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :**

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

X	Immediate (Acute) Health Hazard
X	Delayed (Chronic) Health Hazard
X	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

**SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :**

This product does not contain substances on the List of Toxic Chemicals.

**TOXIC SUBSTANCES CONTROL ACT (TSCA) :**

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

**FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act :**

When use situations necessitate compliance with FDA regulations, this product is acceptable under : the following use conditions.

This product may be used in pulp and papermill boilers where the steam is used to treat pulp in the manufacture of paper and paperboard that may be used to package food.

**NSF NON-FOOD COMPOUNDS REGISTRATION PROGRAM (former USDA List of Proprietary Substances & Non-Food Compounds) :**

NSF Registration number for this product is : 122079

This product is acceptable for treating boilers, steam lines, and/or cooling systems (G7) where neither the treated water nor the steam produced may contact edible products in and around food processing areas.

**FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :**

This product may contain trace levels (<0.1% for carcinogens, <1% all other substances) of the following substance(s) listed under the regulation. Additional components may be unintentionally present at trace levels.

Substance(s)	Citations
• Diethylamine	Sec. 311

**SAFETY DATA SHEET****PRODUCT****CONQUOR® CNQR3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

CLEAN AIR ACT, Sec. 112 (Hazardous Air Pollutants, as amended by 40 CFR 63), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

CALIFORNIA PROPOSITION 65 :

Substances listed under California Proposition 65 are not intentionally added or expected to be present in this product.

MICHIGAN CRITICAL MATERIALS :

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

STATE RIGHT TO KNOW LAWS :

The following substances are disclosed for compliance with State Right to Know Laws:

Cyclohexylamine	108-91-8
Methoxypropylamine	5332-73-0

INTERNATIONAL CHEMICAL CONTROL LAWS :

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

**16. OTHER INFORMATION**

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

**REFERENCES**

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

**SAFETY DATA SHEET****PRODUCT****CONQUOR® CNQR3588****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version),  
Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH,  
(TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight™ (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department  
Date issued : 01/18/2011  
Version Number : 3.0

**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME :** NALCO® 1720**APPLICATION :** OXYGEN SCAVENGER**COMPANY IDENTIFICATION :** Nalco Company  
1601 W. Diehl Road  
Naperville, Illinois  
60563-1198**EMERGENCY TELEPHONE NUMBER(S) :** (800) 424-9300 (24 Hours) CHEMTREC**NFPA 704M/HMIS RATING****HEALTH :** 2/2\* **FLAMMABILITY :** 0/0 **INSTABILITY :** 0/0 **OTHER :**

0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme \* = Chronic Health Hazard

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Sodium Bisulfite	7631-90-5	10.0 - 30.0
Potassium Bisulfite	7773-03-7	1.0 - 5.0
Cobalt Sulfate	10124-43-3	< 0.1

**3. HAZARDS IDENTIFICATION****\*\*EMERGENCY OVERVIEW\*\*****WARNING**

Harmful if swallowed. Contains Sulfite. Causes asthmatic signs and symptoms in hyper-reactive individuals. Irritating to respiratory system. May cause cancer by inhalation. Cobalt and cobalt compounds have been classified as possible carcinogens to humans (Group 2B) by IARC. The ACGIH lists cobalt and inorganic compounds as an animal carcinogen (A3). Contact with acids liberates toxic gas.

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Use a mild soap if available. Protect product from freezing.

Wear suitable protective clothing.

Not flammable or combustible. May evolve oxides of sulfur (SOx) under fire conditions.

**PRIMARY ROUTES OF EXPOSURE :**

Eye, Skin, Inhalation

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 • (630)305-1000

For additional copies of an MSDS visit [www.nalco.com](http://www.nalco.com) and request access.





## SAFETY DATA SHEET

### PRODUCT

**NALCO® 1720**

### EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

## 5. FIRE FIGHTING MEASURES

FLASH POINT : None

### EXTINGUISHING MEDIA :

Not expected to burn. Use extinguishing media appropriate for surrounding fire. Keep containers cool by spraying with water.

### FIRE AND EXPLOSION HAZARD :

Not flammable or combustible. May evolve oxides of sulfur (SOx) under fire conditions.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

## 6. ACCIDENTAL RELEASE MEASURES

### PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Keep people away from and upwind of spill/leak. Ventilate spill area if possible. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

### METHODS FOR CLEANING UP :

**SMALL SPILLS:** Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

### ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

## 7. HANDLING AND STORAGE

### HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.

### STORAGE CONDITIONS :

Store the containers tightly closed. Store in suitable labeled containers. Store separately from acids. Store separately from oxidizers. Amine and sulphite products should not be stored within close proximity or resulting vapors may form visible airborne particles. Protect product from freezing.

**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****HYGIENE RECOMMENDATIONS :**

Use good work and personal hygiene practices to avoid exposure. Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

**HUMAN EXPOSURE CHARACTERIZATION :**

Based on our recommended product application and personal protective equipment, the potential human exposure is:  
Low

**9. PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE	Liquid
APPEARANCE	Pink Clear
ODOR	Pungent
SPECIFIC GRAVITY	1.22 - 1.28 @ 60 °F / 15.6 °C
DENSITY	10.1 - 10.7 lb/gal
SOLUBILITY IN WATER	Complete
pH (100 %)	3.3 - 4.1
VISCOSITY	5 cps @ 60 °F / 15 °C
FREEZING POINT	11 °F / -11 °C
BOILING POINT	205 °F / 96 °C

Note: These physical properties are typical values for this product and are subject to change.

**10. STABILITY AND REACTIVITY****STABILITY :**

Stable under normal conditions.

**HAZARDOUS POLYMERIZATION :**

Hazardous polymerization will not occur.

**CONDITIONS TO AVOID :**

Freezing temperatures.

**MATERIALS TO AVOID :**

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Contains Sulfite. SO<sub>2</sub> may react with vapors from neutralizing amines and may produce a visible cloud of amine salt particles. Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium

**SAFETY DATA SHEET****PRODUCT****NALCO® 1720****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Mysid Shrimp (Mysidopsis bahia)	96 hrs	LC50	> 5,000 mg/l	Product
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**PERSISTENCY AND DEGRADATION :**

Greater than 95% of this product consists of inorganic substances for which a biodegradation value is not applicable.

**MOBILITY :**

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible.

**BIOACCUMULATION POTENTIAL**

The product will not bioaccumulate.

**ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION**

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

If released into the environment, see CERCLA/SUPERFUND in Section 15.

**13. DISPOSAL CONSIDERATIONS**

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

**14. TRANSPORT INFORMATION**

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.



## SAFETY DATA SHEET

### PRODUCT

**NALCO® 1720**

### EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

Sodium Bisulfite : Respiratory irritant

Potassium Bisulfite : Irritant

Cobalt Sulfate : Systemic Effect, Irritant, Cancer suspect agent (refer to Section 3)

#### CERCLA/SUPERFUND, 40 CFR 302 :

This product contains the following Reportable Quantity (RQ) Substance. Also listed is the RQ for the product. If a reportable quantity of product is released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D.C. (1-800-424-8802).

RQ Substance  
Sodium Bisulfite

RQ  
18,347 lbs

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

#### SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

#### SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

X	Immediate (Acute) Health Hazard
X	Delayed (Chronic) Health Hazard
-	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

#### SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

#### TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

#### FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act :

When use situations necessitate compliance with FDA regulations, this product is acceptable under : 21 CFR 173.310 Boiler Water Additives

Limitations: no more than required to produce intended technical effect. Steam produced may be used in contact with any food type, defined under 21 CFR 170.3, which includes milk or milk products.



## SAFETY DATA SHEET

### PRODUCT

**NALCO® 1720**

### EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

#### INTERNATIONAL CHEMICAL CONTROL LAWS :

##### CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

##### AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

##### CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

##### EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

##### JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

##### KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

##### NEW ZEALAND

All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.

##### PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

### 16. OTHER INFORMATION

F100777

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

\* The human risk is: Low

\* The environmental risk is: Low





## SAFETY DATA SHEET

PRODUCT

**NALCO® 1720**

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

Prepared By : Product Safety Department

Date issued : 07/02/2012

Version Number : 6.10



## SAFETY DATA SHEET

**NexGuard® 22310**

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : NexGuard® 22310

Other means of identification : Not applicable.

Recommended use : BOILER WATER INTERNAL TREATMENT

Restrictions on use : Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.

Company : Nalco Company  
1601 W. Diehl Road  
Naperville, Illinois 60563-1198  
USA  
TEL: (630)305-1000

Emergency telephone number : (800) 424-9300 (24 Hours) CHEMTREC

Issuing date : 07/11/2014

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS Label element

Precautionary Statements : **Prevention:**  
Wash hands thoroughly after handling.  
**Response:**  
Specific measures: consult MSDS Section 4.  
**Storage:**  
Store in accordance with local regulations.

Other hazards : None known.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

No hazardous ingredients

### SECTION 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

In case of skin contact : Wash off with soap and plenty of water. Get medical attention if symptoms occur.

If swallowed : Rinse mouth. Get medical attention if symptoms occur.

If inhaled : Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

## SAFETY DATA SHEET

**NexGuard® 22310**

Notes to physician : Treat symptomatically.

See toxicological information (Section 11)

### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : None known.
- Specific hazards during firefighting : Not flammable or combustible.
- Hazardous combustion products : Carbon oxides nitrogen oxides (NOx) Sulphur oxides
- Special protective equipment for firefighters : Use personal protective equipment.
- Specific extinguishing methods : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : No special environmental precautions required.
- Methods and materials for containment and cleaning up : Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away traces with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8. Wash hands after handling.
- Conditions for safe storage : Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers.
- Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: PVC, Stainless Steel 304, EPDM, Buna-N, HDPE (high density polyethylene), Polyurethane, Neoprene, Polypropylene, Polyethylene, Stainless Steel 316L, 100% phenolic resin liner, Chlorosulfonated polyethylene rubber, Fluoroelastomer, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.
- Unsuitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Brass, Mild steel, Epoxy phenolic resin

## SAFETY DATA SHEET

**NexGuard® 22310**

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

#### Personal protective equipment

Eye protection : Safety glasses

Hand protection : Wear protective gloves.  
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : No personal respiratory protective equipment normally required.

Hygiene measures : Wash hands before breaks and immediately after handling the product.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid

Colour : Fluorescent  
Orange  
Yellow

Odour : no data available

Flash point : does not flash

pH : 8.5 - 12.5, (25 °C)

Odour Threshold : no data available

Melting point/freezing point : FREEZING POINT: -6 °C, ASTM D-1177

Initial boiling point and boiling range : no data available

Evaporation rate : no data available

Flammability (solid, gas) : no data available

Upper explosion limit : no data available

Lower explosion limit : no data available

Vapour pressure : similar to water

Relative vapour density : no data available

Relative density : 1.19 (25 °C) ASTM D-1298

Density : 9.9 lb/gal

Water solubility : completely soluble

Solubility in other solvents : no data available

Partition coefficient: n- : no data available

## SAFETY DATA SHEET

**NexGuard® 22310**

octanol/water

Auto-ignition temperature : no data available  
Thermal decomposition : Carbon oxides nitrogen oxides (NOx) Sulphur oxides  
Viscosity, dynamic : no data available  
Viscosity, kinematic : no data available  
VOC : 0 %

### SECTION 10. STABILITY AND REACTIVITY

Chemical stability : Stable under normal conditions.  
Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.  
Conditions to avoid : Freezing temperatures.  
Incompatible materials : Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.  
Hazardous decomposition products : Oxides of carbon  
Oxides of nitrogen  
Oxides of sulfur

### SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation, Eye contact, Skin contact

#### Potential Health Effects

Eyes : Health injuries are not known or expected under normal use.  
Skin : Health injuries are not known or expected under normal use.  
Ingestion : Health injuries are not known or expected under normal use.  
Inhalation : Health injuries are not known or expected under normal use.  
Chronic Exposure : Health injuries are not known or expected under normal use.

#### Experience with human exposure

Eye contact : No symptoms known or expected.  
Skin contact : No symptoms known or expected.  
Ingestion : No symptoms known or expected.  
Inhalation : No symptoms known or expected.

#### Toxicity

##### Product

Acute oral toxicity : no data available



## SAFETY DATA SHEET

### NexGuard® 22310

Acute inhalation toxicity	: no data available
Acute dermal toxicity	: no data available
Skin corrosion/irritation	: no data available
Serious eye damage/eye irritation	: no data available
Respiratory or skin sensitization	: no data available
Carcinogenicity	: no data available
Reproductive effects	: no data available
Germ cell mutagenicity	: no data available
Teratogenicity	: no data available
STOT - single exposure	: no data available
STOT - repeated exposure	: no data available
Aspiration toxicity	: no data available

### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

Environmental Effects	: This product has no known ecotoxicological effects.
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#### Product

Toxicity to fish	: LC50 Rainbow Trout: 7,070 mg/l Exposure time: 96 hrs Test substance: Product  LC50 Fathead Minnow: 1,086 mg/l Exposure time: 96 hrs Test substance: Product  LC50 Inland Silverside: > 5,000 mg/l Exposure time: 96 hrs Test substance: Product
Toxicity to daphnia and other aquatic invertebrates	: LC50 Daphnia magna: 1,650 mg/l Exposure time: 48 hrs Test substance: Product  LC50 Mysid Shrimp (Mysidopsis bahia): > 5,000 mg/l Exposure time: 96 hrs Test substance: Product
Toxicity to algae	: LC50 Algae: 10 mg/l Exposure time: 72 hrs

## SAFETY DATA SHEET

**NexGuard® 22310**

### Persistence and degradability

The organic portion of this preparation is expected to be poorly biodegradable.

Total Organic Carbon (TOC) : 87,000 mg/l

Chemical Oxygen Demand (COD): 240,000 mg/l

Biochemical Oxygen Demand (BOD):

Incubation Period	Value	Test Descriptor
5 d	6,200 mg/l	Product

### Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	: <5%
Water	: 10 - 30%
Soil	: 50 - 70%

The portion in water is expected to be soluble or dispersible.

### Bioaccumulative potential

This preparation or material is not expected to bioaccumulate.

### Other information

no data available

## SECTION 13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

Disposal methods : Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

## SECTION 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

### Land transport (DOT)

## SAFETY DATA SHEET

**NexGuard® 22310**

Proper shipping name : PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION

### Air transport (IATA)

Proper shipping name : PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION

### Sea Transport (IMDG/IMO)

Proper shipping name : PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION

## SECTION 15. REGULATORY INFORMATION

### EPCRA - Emergency Planning and Community Right-to-Know Act

#### CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

#### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

**SARA 311/312 Hazards** : No SARA Hazards

**SARA 302** : SARA 302: No chemicals in this material are subject to the reporting  
requirements of SARA Title III, Section 302.

**SARA 313** : SARA 313: This material does not contain any chemical components  
with known CAS numbers that exceed the threshold (De Minimis)  
reporting levels established by SARA Title III, Section 313.

### California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth  
defects, or any other reproductive harm.

### INTERNATIONAL CHEMICAL CONTROL LAWS :

#### TOXIC SUBSTANCES CONTROL ACT (TSCA)

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40  
CFR 710)

#### CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The substance(s) in this preparation are included in or exempted from the Domestic Substance List  
(DSL).

#### AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment  
Scheme (NICNAS).

#### EUROPE

The substance(s) in this preparation are included in or exempted from the EINECS or ELINCS  
inventories

#### JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of  
Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

## SAFETY DATA SHEET

**NexGuard® 22310**

### KOREA

This product contains substance(s) which are not in compliance with the Toxic Chemical Control Law (TCCL) and may require additional review.

### NEW ZEALAND

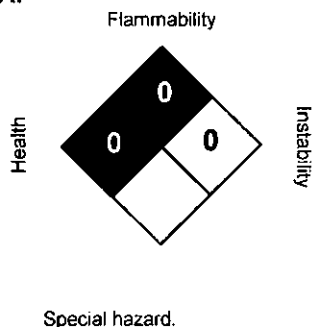
All substances in this product comply with the Hazardous Substances and New Organisms (HSNO) Act 1996, and are listed on or are exempt from the New Zealand Inventory of Chemicals.

### PHILIPPINES

All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

## SECTION 16. OTHER INFORMATION

### NFPA:



### HMIS III:

HEALTH	0
FLAMMABILITY	0
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,  
2 = Moderate, 3 = High  
4 = Extreme, \* = Chronic

Revision Date : 07/11/2014  
Version Number : 1.0  
Prepared By : Regulatory Affairs

**REVISED INFORMATION:** Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

For additional copies of an MSDS visit [www.nalco.com](http://www.nalco.com) and request access.

**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME :** Tri-ACT® 1825**APPLICATION :** CORROSION INHIBITOR**COMPANY IDENTIFICATION :** Nalco Company  
1601 W. Diehl Road  
Naperville, Illinois  
60563-1198**EMERGENCY TELEPHONE NUMBER(S) :** (800) 424-9300 (24 Hours) CHEMTREC**NFPA 704M/HMIS RATING****HEALTH :** 3 / 3 **FLAMMABILITY :** 2 / 2 **INSTABILITY :** 0 / 0 **OTHER :**  
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme \* = Chronic Health Hazard**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Cyclohexylamine	108-91-8	30.0 - 60.0
Diethylethanolamine	100-37-8	10.0 - 30.0
Morpholine	110-91-8	10.0 - 30.0

**3. HAZARDS IDENTIFICATION****\*\*EMERGENCY OVERVIEW\*\*****DANGER**

Corrosive. May cause tissue damage. Combustible. Harmful by inhalation, in contact with skin and if swallowed. Vapors may have a strong offensive odor which may cause sensory response including headache, nausea and vomiting. Irritating to respiratory system. Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Keep away from heat. Keep away from sources of ignition - No smoking. Keep container tightly closed. Avoid breathing vapor. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Use a mild soap if available. Protect product from freezing. Wear a face shield. Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots. Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions.

**PRIMARY ROUTES OF EXPOSURE :**  
Eye, Skin, Inhalation



## SAFETY DATA SHEET

### PRODUCT

**Tri-ACT® 1825**

### EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

#### HUMAN HEALTH HAZARDS - ACUTE :

##### EYE CONTACT :

Corrosive. Will cause eye burns and permanent tissue damage. Exposure to low vapor concentrations can result in foggy or blurred vision, objects appearing bluish and appearance of a halo around lights. These symptoms are temporary.

##### SKIN CONTACT :

Corrosive; causes permanent skin damage. Harmful if absorbed through skin.

##### INGESTION :

Not a likely route of exposure. Corrosive; causes chemical burns to the mouth, throat and stomach. Harmful if swallowed.

##### INHALATION :

Irritating, in high concentrations, to the eyes, nose, throat and lungs. Harmful if inhaled. Vapors may have a strong offensive odor which may cause sensory response including headache, nausea and vomiting.

##### AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

#### HUMAN HEALTH HAZARDS - CHRONIC :

Prolonged exposure to cyclohexylamine in the diet has produced reproductive effects in rats. The relevance to humans is unknown.

## 4. FIRST AID MEASURES

##### EYE CONTACT :

Immediately flush eye with water for at least 15 minutes while holding eyelids open. **PROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT.** Get immediate medical attention.

##### SKIN CONTACT :

Immediately flush with plenty of water for at least 15 minutes. Use a mild soap if available. For a large splash, flood body under a shower. Get immediate medical attention. Contaminated clothing, shoes, and leather goods must be discarded or cleaned before re-use.

##### INGESTION :

Get immediate medical attention. **DO NOT INDUCE VOMITING.** If conscious, washout mouth and give water to drink.

##### INHALATION :

Remove to fresh air, treat symptomatically. Get immediate medical attention.

##### NOTE TO PHYSICIAN :

Probable mucosal damage may contraindicate the use of gastric lavage. Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.





## SAFETY DATA SHEET

### PRODUCT

**Tri-ACT® 1825**

### EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

## 5. FIRE FIGHTING MEASURES

FLASH POINT : 119 °F / 49 °C ( PMCC )

### EXTINGUISHING MEDIA :

Dry powder, Carbon dioxide, Foam, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material.

Keep containers cool by spraying with water.

### FIRE AND EXPLOSION HAZARD :

Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions. May evolve oxides of nitrogen (NOx) under fire conditions.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

## 6. ACCIDENTAL RELEASE MEASURES

### PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Keep people away from and upwind of spill/leak. Ventilate spill area if possible. Remove sources of ignition. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

### METHODS FOR CLEANING UP :

**SMALL SPILLS:** Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

### ENVIRONMENTAL PRECAUTIONS :

Prevent material from entering sewers or waterways.

## 7. HANDLING AND STORAGE

### HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Avoid generating aerosols and mists. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Do not use, store, spill or pour near heat, sparks or open flame. Do not mix with acids.

### STORAGE CONDITIONS :

Store in suitable labeled containers. Store the containers tightly closed. Store away from heat and sources of ignition. Have appropriate fire extinguishers available in and near the storage area. Connections must be grounded to avoid

**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

electrical charges. Store separately from oxidizers. Store separately from acids. Amine and sulphite products should not be stored within close proximity or resulting vapors may form visible airborne particles.

**UNSUITABLE CONSTRUCTION MATERIAL :**

Copper, Brass, Bronze, and their alloys, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****OCCUPATIONAL EXPOSURE LIMITS :**

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Substance(s)	Category:	ppm	mg/m3	Non-Standard Unit
Cyclohexylamine	ACGIH/TWA	10		
Morpholine	ACGIH/TWA	20		
	ACGIH/Skin*			
	OSHA Z1/PEL	20	70	
	OSHA Z1/Skin*			
Diethylethanolamine	ACGIH/TWA	2		
	ACGIH/Skin*			
	OSHA Z1/PEL	10	50	
	OSHA Z1/Skin*			

\* Can be absorbed through the skin.

**ENGINEERING MEASURES :**

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.

**RESPIRATORY PROTECTION :**

Where concentrations in air may exceed the limits given in this section or when significant mists, vapors, aerosols, or dusts are generated, an approved air purifying respirator equipped with suitable filter cartridges is recommended. Consult the respirator / cartridge manufacturer data to verify the suitability of specific devices. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

**HAND PROTECTION :**

When handling this product, the use of chemical gauntlets is recommended. The choice of work glove depends on work conditions and what chemicals are handled. Please contact the PPE manufacturer for advice on what type of glove material may be suitable. Gloves should be replaced immediately if signs of degradation are observed.

**SKIN PROTECTION :**

Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots. A full slicker suit is recommended if gross exposure is possible.

**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****EYE PROTECTION :**

Wear a face shield with chemical splash goggles.

**HYGIENE RECOMMENDATIONS :**

Use good work and personal hygiene practices to avoid exposure. Eye wash station and safety shower are necessary. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

**HUMAN EXPOSURE CHARACTERIZATION :**

Based on our recommended product application and personal protective equipment, the potential human exposure is: Moderate

**9. PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE            Liquid

APPEARANCE                Clear Light Gold

ODOR                        Amine

SPECIFIC GRAVITY           0.94 @ 77 °F / 25 °C

DENSITY                    7.8 lb/gal

SOLUBILITY IN WATER       Complete

pH (1 %)                    11.1

pH (100 %)                  13.7

VISCOSITY                   9 cps @ 77 °F / 25 °C

FREEZING POINT            27 °F / -3 °C

VAPOR PRESSURE            6.5 mm Hg @ 68 °F / 20 °C 18.5 mm Hg @ 100 °F / 38 °C 81 mm Hg @ 150 °F / 66 °C

VOC CONTENT                79.7 % Calculated

Note: These physical properties are typical values for this product and are subject to change.

**10. STABILITY AND REACTIVITY****STABILITY :**

Stable under normal conditions.

**HAZARDOUS POLYMERIZATION :**

Hazardous polymerization will not occur.

**CONDITIONS TO AVOID :**

Heat and sources of ignition including static discharges.

**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****MATERIALS TO AVOID :**

Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Avoid contact with SO<sub>2</sub> or acidic bisulfite products, which may react to form visible airborne amine salt particles. Certain amines in contact with nitrous acid, organic or inorganic nitrites or atmospheres with high nitrous oxide concentrations may produce N-nitrosamines, many of which are cancer-causing agents to laboratory animals.

**HAZARDOUS DECOMPOSITION PRODUCTS :**

Under fire conditions: Oxides of carbon, Oxides of nitrogen

**11. TOXICOLOGICAL INFORMATION**

The following results are for the product.

**ACUTE ORAL TOXICITY :**

Species: Rat  
LD50: 440 mg/kg  
Test Descriptor: Product

**ACUTE DERMAL TOXICITY :**

Species: Rabbit  
LD50: < 2,000 mg/kg  
Test Descriptor: Product

**SENSITIZATION :**

This product is not expected to be a sensitizer.

**CARCINOGENICITY :**

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

**REPRODUCTIVE EFFECTS :**

Prolonged exposure to cyclohexylamine in the diet has produced reproductive effects in rats. The relevance to humans is unknown.

**HUMAN HAZARD CHARACTERIZATION :**

Based on our hazard characterization, the potential human hazard is: High

**12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****ACUTE FISH RESULTS :**

Species	Exposure	LC50	Test Descriptor
Fathead Minnow	96 hrs	75 mg/l	Product
Rainbow Trout	96 hrs	130 mg/l	Product
Inland Silverside	96 hrs	362.5 mg/l	Product

**ACUTE INVERTEBRATE RESULTS :**

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs		61 mg/l	Product
Mysid Shrimp (Mysidopsis bahia)	96 hrs	212.5 mg/l		Product

**PERSISTENCY AND DEGRADATION :**

Chemical Oxygen Demand (COD) : 1,000,000 mg/l

Biological Oxygen Demand (BOD) :

Incubation Period	Value	Test Descriptor
5 d	887,500 mg/l	10 ppm Aqueous Solution of Product
10 d	905,500 mg/l	10 ppm Aqueous Solution of Product
28 d	0 mg/l	10 ppm Aqueous Solution of Product

**MOBILITY :**

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible.

**ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION**

Based on our hazard characterization, the potential environmental hazard is: Moderate

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

If released into the environment, see CERCLA/SUPERFUND in Section 15.

**13. DISPOSAL CONSIDERATIONS**

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

Hazardous Waste: D001, D002

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

**14. TRANSPORT INFORMATION**

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

**LAND TRANSPORT :**

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, DIETHYLAMINOETHANOL, MORPHOLINE
UN/ID No :	UN 2734
Hazard Class - Primary :	8
Hazard Class - Secondary :	3
Packing Group :	II
Flash Point :	49 °C / 119 °F

**AIR TRANSPORT (ICAO/IATA) :**

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, DIETHYLAMINOETHANOL, MORPHOLINE
UN/ID No :	UN 2734
Hazard Class - Primary :	8
Hazard Class - Secondary :	3
Packing Group :	II

**MARINE TRANSPORT (IMDG/IMO) :**

Proper Shipping Name :	AMINES, LIQUID, CORROSIVE, FLAMMABLE, N.O.S.
Technical Name(s) :	CYCLOHEXYLAMINE, DIETHYLAMINOETHANOL, MORPHOLINE
UN/ID No :	UN 2734
Hazard Class - Primary :	8
Hazard Class - Secondary :	3
Packing Group :	II



**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****15. REGULATORY INFORMATION**

This section contains additional information that may have relevance to regulatory compliance. The information in this section is for reference only. It is not exhaustive, and should not be relied upon to take the place of an individualized compliance or hazard assessment. Nalco accepts no liability for the use of this information.

**NATIONAL REGULATIONS, USA :****OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :**

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Cyclohexylamine : Corrosive, Flammable, Prolonged exposure to cyclohexylamine in the diet has produced reproductive effects in rats. The relevance to humans is unknown.

Diethylethanolamine : Combustible., Corrosive

Morpholine : Corrosive, Flammable

**CERCLA/SUPERFUND, 40 CFR 302 :**

Notification of spills of this product is not required.

**SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :****SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :**

This product contains the following substance(s) which is listed in Appendix A and B as an Extremely Hazardous Substance. Listed below are the statutory Threshold Planning Quantity (TPQ) for the substance(s) and the Reportable Quantity (RQ) of the product.

Extremely Hazardous Substance  
Cyclohexylamine

TPQ  
10,000 lbs

RQ  
22,840 lbs

**SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :**

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

X	Immediate (Acute) Health Hazard
X	Delayed (Chronic) Health Hazard
X	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

**SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :**

This product does not contain substances on the List of Toxic Chemicals.

**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****TOXIC SUBSTANCES CONTROL ACT (TSCA) :**

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

**FOOD AND DRUG ADMINISTRATION (FDA) Federal Food, Drug and Cosmetic Act :**

When use situations necessitate compliance with FDA regulations, this product is acceptable under : 21 CFR 173.310  
Boiler Water Additives

The following limitations apply:

Maximum dosage

22 PPM

Limitation

as product in the steam

This product can not be used where the steam produced will contact milk or milk products.

This product has been certified as KOSHER/PAREVE for year-round use INCLUDING THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.

**FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :**

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

**CLEAN AIR ACT, Sec. 112 (Hazardous Air Pollutants, as amended by 40 CFR 63), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :**

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

**CALIFORNIA PROPOSITION 65 :**

Substances listed under California Proposition 65 are not intentionally added or expected to be present in this product.

**MICHIGAN CRITICAL MATERIALS :**

Substances listed under this regulation are not intentionally added or expected to be present in this product. Listed components may be present at trace levels.

**STATE RIGHT TO KNOW LAWS :**

The following substances are disclosed for compliance with State Right to Know Laws:

Water	7732-18-5
Cyclohexylamine	108-91-8
Morpholine	110-91-8
Diethylethanolamine	100-37-8

**INTERNATIONAL CHEMICAL CONTROL LAWS :**

**SAFETY DATA SHEET****PRODUCT****Tri-ACT® 1825****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

**16. OTHER INFORMATION**

F701148

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

\* The human risk is: Moderate

\* The environmental risk is: Moderate

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

**REFERENCES**

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.



## **SAFETY DATA SHEET**

**PRODUCT**

**Tri-ACT® 1825**

**EMERGENCY TELEPHONE NUMBER(S)**

**(800) 424-9300 (24 Hours) CHEMTREC**

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight™ (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight™ CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS™ CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department

Date issued : 01/13/2011

Version Number : 3.0



Improving the environment, one client at a time...

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Monday, July 07, 2014

Ms. Julie Baty  
GEORGIA PACIFIC / BIG ISLAND VA  
9363 LEE JACKSON HWY  
PO BOX 40  
BIG ISLAND, VA 24526

TEL: (434) 299-5911  
FAX: (434) 299-5725

RE: VPDES PERMIT RENEWAL

Work Order #: 1406R91

Dear Ms. Julie Baty:

REI Consultants, Inc. received 8 sample(s) on 6/24/2014 for the analyses presented in the following report.

Sincerely,

Scott Gross  
Project Manager



**Client:** GEORGIA PACIFIC / BIG ISLAND VA**Project:** VPDES PERMIT RENEWAL

---

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

This report may not be reproduced, except in full, without the written approval of REIC.

**DEFINITIONS:**

MCL: Maximum Contaminant Level

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).

NA: Not Applicable

ND: Not Detected at the PQL or MDL

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported.

TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.

Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

**QUALIFIERS:**

\*: Reported value exceeds required MCL

B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.

H: Holding time for preparation or analysis has been exceeded.

J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.

S: % REC (% recovery) exceeds control limits

**CERTIFICATIONS:**

Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148

Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839

Roanoke, VA: VADCLS(VELAP) 460150

Verona, VA: VADCLS(VELAP) 460151

Ashland, KY: KYDEP 00094, WV 389

Morgantown, WV: WVDHHR 003112M, WVDEP 387



# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	6/24/2014 12:00:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	6/24/2014
<b>Lab ID:</b>	1406R91-01A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 003 GRAB	<b>Site ID:</b>	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>PHENOLS</b>		<b>Method: EPA 604</b>				<b>Analyst: CL</b>		
2,4,6-Trichlorophenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
2,4-Dichlorophenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
2,4-Dimethylphenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
2,4-Dinitrophenol	ND	NA	0.0069	NA		mg/L	7/2/2014 6:22 PM	
2-Chlorophenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
2-Nitrophenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
4,6-Dinitro-2-methylphenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
4-Chloro-3-methylphenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
4-Nitrophenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
Pentachlorophenol	ND	NA	0.0014	NA		mg/L	7/2/2014 6:22 PM	
Phenol	0.0010	NA	0.0014	NA	J	mg/L	7/2/2014 6:22 PM	
Surr: 2,4-Dibromophenol	85.4	NA	21.2-158	NA		%REC	7/2/2014 6:22 PM	

## Notes:

Insufficient sample was available to prepare and analyze a matrix spiked quality control sample. Accuracy assessment was based on a lab control sample.

<b>OIL and GREASE</b>		<b>Method: EPA 1664 Rev. A</b>				<b>Analyst: KS</b>		
Oil & Grease	ND	NA	5.0	NA		mg/L	6/25/2014 11:00 AM	PA/VA
<b>Cyanide</b>		<b>Method: EPA 335.4, Rev. 1 (1993)</b>				<b>Analyst: BS</b>		
Cyanide, Total	0.012	NA	0.020	NA	J	mg/L	6/26/2014 12:32 PM	PA/VA

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-02A  
Client Sample ID: OUTFALL 003 LAB COMP

Collection Date: 6/24/2014 1:00:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>ACROLEIN BY E624</b>			<b>Method: EPA 624</b>				<b>Analyst: RB</b>	
Acrolein	ND	NA	50	NA		µg/L	6/27/2014 3:42 PM	PA/VA

## Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

The sample was improperly preserved for acrolein at pH<2.

<b>VOLATILE ORGANIC COMPOUNDS</b>			<b>Method: EPA 624</b>				<b>Analyst: RB</b>	
1,1,1,2-Tetrachloroethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
1,1,1-Trichloroethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,1,2,2-Tetrachloroethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,1,2-Trichloroethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,1-Dichloroethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,1-Dichloroethene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,1-Dichloropropene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
1,2,3-Trichlorobenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
1,2,3-Trichloropropane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
1,2,4-Trichlorobenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
1,2,4-Trimethylbenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
DBCP	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
1,2-Dibromoethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
1,2-Dichlorobenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,2-Dichloroethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,2-Dichloropropane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,3,5-Trimethylbenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
1,3-Dichlorobenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
1,3-Dichloropropane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
1,4-Dichlorobenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
2,2-Dichloropropane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
2-Butanone	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM	
2-Chloroethyl vinyl ether	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM	PA/VA
2-Chlorotoluene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
2-Hexanone	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM	
4-Chlorotoluene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
p-Isopropyltoluene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
4-Methyl-2-pentanone	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Acetone	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Acrylonitrile	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Benzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Bromobenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-02A  
Client Sample ID: OUTFALL 003 LAB COMP

Collection Date: 6/24/2014 1:00:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Bromochloromethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
Bromodichloromethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Bromoform	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Bromomethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Carbon disulfide	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM	
Carbon tetrachloride	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Chlorobenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Chloroethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Chloroform	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Chloromethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
cis-1,2-Dichloroethene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
cis-1,3-Dichloropropene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Dibromochloromethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Dibromomethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
Dichlorodifluoromethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
Ethylbenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Hexachlorobutadiene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
Iodomethane	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM	
Isopropylbenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
m,p-Xylene	ND	NA	10.0	NA		µg/L	6/27/2014 3:42 PM	PA/VA
MTBE	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Methylene chloride	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
n-Butylbenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
n-Propylbenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
Naphthalene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
o-Xylene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
sec-Butylbenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
Styrene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA
tert-Butylbenzene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	
Tetrachloroethene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Toluene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
trans-1,2-Dichloroethene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
trans-1,3-Dichloropropene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Trichloroethene	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Trichlorofluoromethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Vinyl acetate	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM	
Vinyl chloride	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	107	NA	68.7-129	NA		%REC	6/27/2014 3:42 PM	

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-02A  
Client Sample ID: OUTFALL 003 LAB COMP

Collection Date: 6/24/2014 1:00:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed NELAP
Surr: 4-Bromofluorobenzene	96.1	NA	71.8-127	NA		%REC	6/27/2014 3:42 PM
Surr: Dibromofluoromethane	104	NA	74.3-124	NA		%REC	6/27/2014 3:42 PM
Surr: Toluene-d8	97.2	NA	71.4-129	NA		%REC	6/27/2014 3:42 PM

## Notes:

2-Chloroethylvinyl ether is unstable under conditions of acidic preservation.  
Elevated PQLs are due to matrix interference. Sample foamed during analysis.

## VOLATILE ORGANIC COMPOUNDS - ADDITIONAL

Method: EPA 624

Analyst: RB

1,1,2-Trichloro-1,2,2-trifluoroethane	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM
1,4-Dioxane	ND	NA	1,000	NA		µg/L	6/27/2014 3:42 PM
1-Propanol	ND	NA	500	NA		µg/L	6/27/2014 3:42 PM
2-Propanol	ND	NA	500	NA		µg/L	6/27/2014 3:42 PM
Acetaldehyde	ND	NA	50.0	NA		µg/L	7/1/2014 8:55 PM
Acetonitrile	ND	NA	500	NA		µg/L	6/27/2014 3:42 PM
Allyl chloride	ND	NA	10.0	NA		µg/L	6/27/2014 3:42 PM
Chloroprene	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM
Cyclohexane	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM
Cyclohexanone	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM
Diethyl ether	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM
Ethanol	ND	NA	1,000	NA		µg/L	6/27/2014 3:42 PM
Ethyl acetate	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM
Ethyl methacrylate	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM
Hexachloroethane	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM
Isobutyl alcohol	ND	NA	500	NA		µg/L	6/27/2014 3:42 PM
Isopropyl acetate	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM
Isopropyl ether	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM
Methacrylonitrile	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM
Methyl methacrylate	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM
n-Butyl alcohol	ND	NA	500	NA		µg/L	6/27/2014 3:42 PM
Pentachloroethane	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM
Pentyl acetate	ND	NA	25.0	NA		µg/L	6/27/2014 3:42 PM
Propionitrile	ND	NA	500	NA		µg/L	6/27/2014 3:42 PM
tert-Amyl alcohol	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM
tert-Amyl Ethyl Ether	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM
tert-Amyl Methyl Ether	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM
tert-Butyl alcohol	ND	NA	1,000	NA		µg/L	6/27/2014 3:42 PM
tert-Butyl Ethyl Ether	ND	NA	5.00	NA		µg/L	6/27/2014 3:42 PM
Tetrahydrofuran	ND	NA	250	NA		µg/L	6/27/2014 3:42 PM

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	6/24/2014 1:00:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	6/24/2014
<b>Lab ID:</b>	1406R91-02A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 003 LAB COMP	<b>Site ID:</b>	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed NELAP
trans-1,4-Dichloro-2-butene	ND	NA	50.0	NA		µg/L	6/27/2014 3:42 PM
Surr: 1,2-Dichloroethane-d4	106	NA	80-120	NA		%REC	6/27/2014 3:42 PM
Surr: 4-Bromofluorobenzene	96.1	NA	80-120	NA		%REC	6/27/2014 3:42 PM
Surr: Dibromofluoromethane	106	NA	80-120	NA		%REC	6/27/2014 3:42 PM
Surr: Toluene-d8	98.2	NA	80-120	NA		%REC	6/27/2014 3:42 PM

## Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-03A  
Client Sample ID: OUTFALL 003 COMP

Collection Date: 6/24/2014 9:11:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>METALS BY ICP</b>			<b>Method: EPA 200.7 Rev. 4.4 (1994)</b>			<b>Analyst: DS</b>		
Aluminum	0.183	NA	0.0050	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Antimony	ND	NA	0.0200	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Barium	0.172	NA	0.0050	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Boron	1.19	NA	0.0500	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Cadmium	ND	NA	0.0010	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Chromium	0.0021	NA	0.0050	NA	J	mg/L	6/26/2014 1:55 PM	PA/VA
Cobalt	0.0011	NA	0.0050	NA	J	mg/L	6/26/2014 1:55 PM	PA/VA
Copper	ND	NA	0.0050	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Iron	0.0807	NA	0.0500	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Lead	ND	NA	0.0100	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Magnesium	8.97	NA	0.500	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Manganese	0.0705	NA	0.0050	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Molybdenum	0.0033	NA	0.0050	NA	J	mg/L	6/26/2014 1:55 PM	PA/VA
Nickel	0.0026	NA	0.0050	NA	J	mg/L	6/26/2014 1:55 PM	PA/VA
Selenium	ND	NA	0.0200	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Silver	ND	NA	0.0050	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Thallium	ND	NA	0.0100	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Tin	ND	NA	0.500	NA		mg/L	7/2/2014 1:59 PM	PA/VA
Titanium	ND	NA	0.0100	NA		mg/L	6/26/2014 1:55 PM	PA/VA
Zinc	0.0055	NA	0.0200	NA	J	mg/L	6/26/2014 1:55 PM	PA/VA
<b>MERCURY, Total</b>			<b>Method: EPA 245.1, Rev. 3.0 (1994)</b>			<b>Analyst: BG</b>		
Mercury	ND	NA	0.0010	NA		mg/L	6/27/2014 11:51 AM	PA/VA
<b>PESTICIDES/PCBS</b>			<b>Method: EPA 608</b>			<b>Analyst: NC</b>		
Aroclor 1016	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Aroclor 1221	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Aroclor 1232	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Aroclor 1242	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Aroclor 1248	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Aroclor 1254	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Aroclor 1260	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Aldrin	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
alpha-BHC	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
beta-BHC	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
delta-BHC	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA



# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-03A  
Client Sample ID: OUTFALL 003 COMP

Collection Date: 6/24/2014 9:11:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
gamma-BHC	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Chlordane	ND	NA	0.00514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
4,4'-DDD	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
4,4'-DDE	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
4,4'-DDT	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Dieldrin	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Endosulfan I	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Endosulfan II	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Endosulfan sulfate	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Endrin	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Endrin aldehyde	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Heptachlor	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Heptachlor epoxide	ND	NA	0.000514	NA		mg/L	6/26/2014 5:40 AM	PA/VA
Toxaphene	ND	NA	0.00514	NA		mg/L	6/26/2014 9:33 AM	PA/VA
Surr: tetrachloro-m-xylene	62.0	NA	19.49-150	NA		%REC	6/26/2014 5:40 AM	

## SEMIVOLATILE ORGANIC COMPOUNDS

Method: EPA 625 (1982)

Analyst: JD

Acenaphthene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Acenaphthylene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Anthracene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Benzo(a)anthracene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Benzidine	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Benzo(a)pyrene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Benzo(b)fluoranthene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Benzo(g,h,i)perylene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Benzo(k)fluoranthene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Bis(2-chloroethoxy)methane	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Bis(2-chloroethyl)ether	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Bis(2-chloroisopropyl)ether	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Bis(2-ethylhexyl)phthalate	0.0306	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
4-Bromophenyl phenyl ether	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Butyl benzyl phthalate	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
4-Chloro-3-methylphenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
2-Chloronaphthalene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA
2-Chloronaphthalene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
2-Chlorophenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
4-Chlorophenyl phenyl ether	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA
Chrysene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA/VA

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-03A  
Client Sample ID: OUTFALL 003 COMP

Collection Date: 6/24/2014 9:11:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Dibenz(a,h)anthracene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Di-n-butyl phthalate	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
1,2-Dichlorobenzene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA
1,3-Dichlorobenzene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA
1,4-Dichlorobenzene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PA
3,3'-Dichlorobenzidine	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
2,4-Dichlorophenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Diethyl phthalate	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
2,4-Dimethylphenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Dimethyl phthalate	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
4,6-Dinitro-2-methylphenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
2,4-Dinitrophenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
2,4-Dinitrotoluene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
2,6-Dinitrotoluene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Di-n-octyl phthalate	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Fluoranthene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Fluorene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Hexachlorobenzene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Hexachlorobutadiene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Hexachlorocyclopentadiene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Hexachloroethane	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Indeno(1,2,3-cd)pyrene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Isophorone	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Naphthalene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Nitrobenzene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
2-Nitrophenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
4-Nitrophenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
N-Nitrosodi-n-propylamine	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
N-Nitrosodimethylamine	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
N-Nitrosodiphenylamine	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Pentachlorophenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Phenanthrene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Phenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Pyrene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
1,2,4-Trichlorobenzene	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
2,4,6-Trichlorophenol	ND	NA	0.0104	NA		mg/L	7/1/2014 12:36 AM	PAVA
Surr: 2-Fluorophenol	51.9	NA	25.9-110	NA		%REC	7/1/2014 12:36 AM	
Surr: Phenol-d5	42.3	NA	8.2-110	NA		%REC	7/1/2014 12:36 AM	

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-03A  
Client Sample ID: OUTFALL 003 COMP

Collection Date: 6/24/2014 9:11:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Surr: Nitrobenzene-d5	112	NA	62.2-110	NA	S	%REC	7/1/2014 12:36 AM	
Surr: 2-Fluorobiphenyl	85.9	NA	54.6-110	NA		%REC	7/1/2014 12:36 AM	
Surr: 2,4,6-Tribromophenol	86.3	NA	61.7-110	NA		%REC	7/1/2014 12:36 AM	
Surr: 4-Terphenyl-d14	78.0	NA	10.7-110	NA		%REC	7/1/2014 12:36 AM	
<b>SURFACTANTS</b>			<b>Method: SM5540 C-2000</b>				<b>Analyst: SP</b>	
MBAS (calibrated on MW340 LAS)	ND	NA	0.0625	NA		mg/L	6/25/2014 10:40 AM	PAVA
<b>Chemical Oxygen Demand</b>			<b>Method: EPA 410.4, Rev. 2 (1993)</b>				<b>Analyst: BA</b>	
Chemical Oxygen Demand	162	NA	50	NA		mg/L	6/25/2014 9:30 AM	PAVA
<b>ANIONS by ION CHROMATOGRAPHY</b>			<b>Method: EPA 300.0, Rev.2.1 (1993)</b>				<b>Analyst: CF</b>	
Bromide	1.29	NA	0.10	NA		mg/L	6/25/2014 10:05 PM	PAVA
Sulfate	65.4	NA	5.00	NA		mg/L	6/25/2014 10:05 PM	PAVA
<b>ORGANIC NITROGEN</b>			<b>Method: EPA 351.2, Rev. 2.0 (1993) / EPA 350.1</b>				<b>Analyst: KS</b>	
Nitrogen, Organic	2.02	NA	1.00	NA		mg/L	7/1/2014 1:15 PM	
<b>PHOSPHORUS</b>			<b>Method: SM4500-P BE-1999</b>				<b>Analyst: BA</b>	
Phosphorus, Total	0.13	NA	0.05	NA		mg/L	6/25/2014 12:00 PM	PAVA
<b>AMMONIA NITROGEN</b>			<b>Method: EPA 350.1, Rev.2. (1993)</b>				<b>Analyst: AL</b>	
Nitrogen, Ammonia (As N)	ND	NA	1.00	NA		mg/L	6/25/2014 10:16 AM	PAVA
<b>ORGANIC CARBON, TOTAL</b>			<b>Method: SM5310 C-2000</b>				<b>Analyst: DSD</b>	
Total Organic Carbon	39.1	NA	1.00	NA		mg/L	7/1/2014 10:43 AM	PAVA

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client:	GEORGIA PACIFIC / BIG ISLAND VA	Collection Date:	6/24/2014 8:09:00 AM
Project:	VPDES PERMIT RENEWAL	Date Received:	6/24/2014
Lab ID:	1406R91-04A	Matrix:	Waste Water
Client Sample ID:	OUTFALL 002 GRAB	Site ID:	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
OIL and GREASE		Method: EPA 1664 Rev. A				Analyst: KS		
Oil & Grease	ND	NA	5.0	NA		mg/L	6/25/2014 11:00 AM	PAVA

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	6/24/2014 8:15:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	6/24/2014
<b>Lab ID:</b>	1406R91-05A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 002 COMP	<b>Site ID:</b>	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed NELAP	
<b>METALS BY ICP</b>			<b>Method: EPA 200.7 Rev. 4.4 (1994)</b>				<b>Analyst: DS</b>	
Aluminum	0.138	NA	0.0050	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Antimony	ND	NA	0.0200	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Barium	0.0569	NA	0.0050	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Boron	0.0160	NA	0.0500	NA	J	mg/L	6/26/2014 2:02 PM	PA/VA
Cadmium	ND	NA	0.0010	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Chromium	0.0012	NA	0.0050	NA	J	mg/L	6/26/2014 2:02 PM	PA/VA
Cobalt	ND	NA	0.0050	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Copper	0.0031	NA	0.0050	NA	J	mg/L	6/26/2014 2:02 PM	PA/VA
Iron	0.265	NA	0.0500	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Lead	ND	NA	0.0100	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Magnesium	8.17	NA	0.500	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Manganese	0.0332	NA	0.0050	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Molybdenum	ND	NA	0.0050	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Nickel	ND	NA	0.0050	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Selenium	ND	NA	0.0200	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Silver	ND	NA	0.0050	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Tin	ND	NA	0.500	NA		mg/L	7/2/2014 2:06 PM	PA/VA
Titanium	ND	NA	0.0100	NA		mg/L	6/26/2014 2:02 PM	PA/VA
Zinc	0.0042	NA	0.0200	NA	J	mg/L	6/26/2014 2:02 PM	PA/VA
<b>MERCURY, Total</b>			<b>Method: EPA 245.1, Rev. 3.0 (1994)</b>				<b>Analyst: BG</b>	
Mercury	ND	NA	0.0010	NA		mg/L	6/27/2014 11:53 AM	PA/VA
<b>Chemical Oxygen Demand</b>			<b>Method: EPA 410.4, Rev. 2 (1993)</b>				<b>Analyst: BA</b>	
Chemical Oxygen Demand	12	NA	10	NA		mg/L	6/25/2014 9:30 AM	PA/VA
<b>ANIONS by ION CHROMATOGRAPHY</b>			<b>Method: EPA 300.0, Rev.2.1 (1993)</b>				<b>Analyst: CF</b>	
Bromide	ND	NA	0.10	NA		mg/L	6/25/2014 10:24 PM	PA/VA
Sulfate	36.9	NA	5.00	NA		mg/L	6/25/2014 10:24 PM	PA/VA
<b>ANIONS by ION CHROMATOGRAPHY</b>			<b>Method: SM4110B-2000</b>				<b>Analyst: AL</b>	
Nitrogen, Nitrate-Nitrite	0.31	NA	0.10	NA		mg/L	6/25/2014 9:11 AM	PA/VA

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	6/24/2014 8:15:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	6/24/2014
<b>Lab ID:</b>	1406R91-05A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 002 COMP	<b>Site ID:</b>	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>ORGANIC NITROGEN</b>			<b>Method: EPA 351.2, Rev. 2.0 (1993) / EPA 350.1</b>				<b>Analyst: KS</b>	
Nitrogen, Organic	0.16	NA	0.10	NA		mg/L	7/1/2014 1:15 PM	
<b>TOTAL KJELDAHL NITROGEN (TKN)</b>			<b>Method: EPA 351.2, Rev. 2.0 (1993)</b>				<b>Analyst: AL</b>	
Nitrogen, Kjeldahl, Total	0.16	NA	0.50	NA	J	mg/L	6/26/2014 9:28 AM	PA/VA
<b>PHOSPHORUS</b>			<b>Method: SM4500-P BE-1999</b>				<b>Analyst: BA</b>	
Phosphorus, Total	0.02	NA	0.05	NA	J	mg/L	6/25/2014 12:00 PM	PA/VA
<b>AMMONIA NITROGEN</b>			<b>Method: EPA 350.1, Rev.2. (1993)</b>				<b>Analyst: AL</b>	
Nitrogen, Ammonia (As N)	ND	NA	0.10	NA		mg/L	6/25/2014 10:16 AM	PA/VA
<b>TOTAL SUSPENDED SOLIDS</b>			<b>Method: SM2540 D-1997</b>				<b>Analyst: SF</b>	
Total Suspended Solids	8	NA	1	NA		mg/L	6/25/2014 11:04 AM	PA/VA
<b>ORGANIC CARBON, TOTAL</b>			<b>Method: SM5310 C-2000</b>				<b>Analyst: DSD</b>	
Total Organic Carbon	3.99	NA	1.00	NA		mg/L	7/1/2014 10:43 AM	PA/VA



**WO#: 1406R91**

**Date Reported: 7/7/2014**

**Client:** GEORGIA PACIFIC / BIG ISLAND VA  
**Project:** VPDES PERMIT RENEWAL  
**Lab ID:** 1406R91-06A  
**Client Sample ID:** 001 OUTFALL GRAB

**Collection Date:** 6/24/2014 8:26:00 AM  
**Date Received:** 6/24/2014  
**Matrix:** Waste Water  
**Site ID:** VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>OIL and GREASE</b>			<b>Method: EPA 1664 Rev. A</b>				<b>Analyst: KS</b>	
Oil & Grease	ND	NA	5.0	NA		mg/L	6/25/2014 11:00 AM	PAVA

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	6/24/2014 8:31:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	6/24/2014
<b>Lab ID:</b>	1406R91-07A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 001 COMPOSITE	<b>Site ID:</b>	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
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## METALS BY ICP

Method: EPA 200.7 Rev. 4.4  
(1994)

Analyst: DS

Aluminum	0.0979	NA	0.0050	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Antimony	ND	NA	0.0200	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Barium	0.0558	NA	0.0050	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Boron	ND	NA	0.0500	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Cadmium	ND	NA	0.0010	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Chromium	0.0012	NA	0.0050	NA	J	mg/L	6/26/2014 2:09 PM	PA/VA
Cobalt	ND	NA	0.0050	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Copper	0.0038	NA	0.0050	NA	J	mg/L	6/26/2014 2:09 PM	PA/VA
Iron	0.152	NA	0.0500	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Lead	ND	NA	0.0100	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Magnesium	7.85	NA	0.500	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Manganese	0.0219	NA	0.0050	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Molybdenum	ND	NA	0.0050	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Nickel	ND	NA	0.0050	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Selenium	ND	NA	0.0200	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Silver	ND	NA	0.0050	NA		mg/L	6/26/2014 2:09 PM	PA/VA
Tin	ND	NA	0.500	NA		mg/L	7/2/2014 2:19 PM	PA/VA
Titanium	0.0020	NA	0.0100	NA	J	mg/L	6/26/2014 2:09 PM	PA/VA
Zinc	0.0031	NA	0.0200	NA	J	mg/L	6/26/2014 2:09 PM	PA/VA

## MERCURY, Total

Method: EPA 245.1, Rev.  
3.0 (1994)

Analyst: BG

Mercury	ND	NA	0.0010	NA		mg/L	6/27/2014 11:55 AM	PA/VA
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## Chemical Oxygen Demand

Method: EPA 410.4, Rev. 2  
(1993)

Analyst: BA

Chemical Oxygen Demand	13	NA	10	NA		mg/L	6/25/2014 9:30 AM	PA/VA
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## ANIONS by ION CHROMATOGRAPHY

Method: EPA 300.0, Rev.2.1  
(1993)

Analyst: CF

Bromide	ND	NA	0.10	NA		mg/L	6/25/2014 10:43 PM	PA/VA
Sulfate	38.1	NA	5.00	NA		mg/L	6/25/2014 10:43 PM	PA/VA

## ANIONS by ION CHROMATOGRAPHY

Method: SM4110B-2000

Analyst: AL

Nitrogen, Nitrate-Nitrite	0.31	NA	0.10	NA		mg/L	6/25/2014 9:29 AM	PA/VA
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# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	6/24/2014 8:31:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	6/24/2014
<b>Lab ID:</b>	1406R91-07A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 001 COMPOSITE	<b>Site ID:</b>	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>ORGANIC NITROGEN</b>			<b>Method: EPA 351.2, Rev. 2.0 (1993) / EPA 350.1</b>				<b>Analyst: KS</b>	
Nitrogen, Organic	0.11	NA	0.10	NA		mg/L	7/1/2014 1:15 PM	
<b>TOTAL KJELDAHL NITROGEN (TKN)</b>			<b>Method: EPA 351.2, Rev. 2.0 (1993)</b>				<b>Analyst: AL</b>	
Nitrogen, Kjeldahl, Total	0.10	NA	0.50	NA	J	mg/L	6/26/2014 9:29 AM	PAVA
<b>PHOSPHORUS</b>			<b>Method: SM4500-P BE-1999</b>				<b>Analyst: BA</b>	
Phosphorus, Total	ND	NA	0.05	NA		mg/L	6/25/2014 12:00 PM	PAVA
<b>AMMONIA NITROGEN</b>			<b>Method: EPA 350.1, Rev.2. (1993)</b>				<b>Analyst: AL</b>	
Nitrogen, Ammonia (As N)	ND	NA	0.10	NA		mg/L	6/25/2014 10:17 AM	PAVA
<b>TOTAL SUSPENDED SOLIDS</b>			<b>Method: SM2540 D-1997</b>				<b>Analyst: SF</b>	
Total Suspended Solids	4	NA	1	NA		mg/L	6/25/2014 11:04 AM	PAVA
<b>ORGANIC CARBON, TOTAL</b>			<b>Method: SM5310 C-2000</b>				<b>Analyst: DSD</b>	
Total Organic Carbon	3.49	NA	1.00	NA		mg/L	7/1/2014 10:43 AM	PAVA

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-08A  
Client Sample ID: TRIP BLANK

Collection Date: 6/24/2014 12:00:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>ACROLEIN BY E624</b>		<b>Method: EPA 624</b>				<b>Analyst: RB</b>		
Acrolein	ND	NA	10	NA		µg/L	6/27/2014 3:09 PM	PA/VA
<b>VOLATILE ORGANIC COMPOUNDS</b>		<b>Method: EPA 624</b>				<b>Analyst: RB</b>		
1,1,1,2-Tetrachloroethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
1,1,1-Trichloroethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,1,2,2-Tetrachloroethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,1,2-Trichloroethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,1-Dichloroethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,1-Dichloroethene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,1-Dichloropropene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
1,2,3-Trichlorobenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
1,2,3-Trichloropropane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
1,2,4-Trichlorobenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
1,2,4-Trimethylbenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
DBCP	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
1,2-Dibromoethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
1,2-Dichlorobenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,2-Dichloroethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,2-Dichloropropane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,3,5-Trimethylbenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
1,3-Dichlorobenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
1,3-Dichloropropane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
1,4-Dichlorobenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
2,2-Dichloropropane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
2-Butanone	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
2-Chloroethyl vinyl ether	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
2-Chlorotoluene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
2-Hexanone	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
4-Chlorotoluene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
p-Isopropyltoluene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
4-Methyl-2-pentanone	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Acetone	13.0	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Acrylonitrile	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Benzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Bromobenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
Bromochloromethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
Bromodichloromethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-08A  
Client Sample ID: TRIP BLANK

Collection Date: 6/24/2014 12:00:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Bromoform	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Bromomethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Carbon disulfide	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	
Carbon tetrachloride	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Chlorobenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Chloroethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Chloroform	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Chloromethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
cis-1,2-Dichloroethene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
cis-1,3-Dichloropropene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Dibromochloromethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Dibromomethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
Dichlorodifluoromethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
Ethylbenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Hexachlorobutadiene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
Iodomethane	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
Isopropylbenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
m,p-Xylene	ND	NA	2.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
MTBE	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Methylene chloride	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
n-Butylbenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
n-Propylbenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
Naphthalene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
o-Xylene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
sec-Butylbenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
Styrene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA
tert-Butylbenzene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
Tetrachloroethene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Toluene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
trans-1,2-Dichloroethene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
trans-1,3-Dichloropropene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Trichloroethene	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Trichlorofluoromethane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Vinyl acetate	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
Vinyl chloride	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	103	NA	68.7-129	NA		%REC	6/27/2014 3:09 PM	
Surr: 4-Bromofluorobenzene	98.3	NA	71.8-127	NA		%REC	6/27/2014 3:09 PM	
Surr: Dibromofluoromethane	103	NA	74.3-124	NA		%REC	6/27/2014 3:09 PM	

# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES PERMIT RENEWAL  
Lab ID: 1406R91-08A  
Client Sample ID: TRIP BLANK

Collection Date: 6/24/2014 12:00:00 AM  
Date Received: 6/24/2014  
Matrix: Waste Water  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Surr: Toluene-d8	96.9	NA	71.4-129	NA		%REC	6/27/2014 3:09 PM	

## VOLATILE ORGANIC COMPOUNDS - ADDITIONAL

Method: EPA 624

Analyst: RB

1,1,2-Trichloro-1,2,2-trifluoroethane	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	
1,4-Dioxane	ND	NA	200	NA		µg/L	6/27/2014 3:09 PM	
1-Propanol	ND	NA	100	NA		µg/L	6/27/2014 3:09 PM	
2-Propanol	ND	NA	100	NA		µg/L	6/27/2014 3:09 PM	
Acetaldehyde	ND	NA	10.0	NA		µg/L	7/1/2014 9:28 PM	
Acetonitrile	ND	NA	100	NA		µg/L	6/27/2014 3:09 PM	
Allyl chloride	ND	NA	2.00	NA		µg/L	6/27/2014 3:09 PM	
Chloroprene	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	
Cyclohexane	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
Cyclohexanone	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
Diethyl ether	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	
Ethanol	ND	NA	200	NA		µg/L	6/27/2014 3:09 PM	
Ethyl acetate	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	
Ethyl methacrylate	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
Hexachloroethane	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
Isobutyl alcohol	ND	NA	100	NA		µg/L	6/27/2014 3:09 PM	
Isopropyl acetate	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	
Isopropyl ether	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	
Methacrylonitrile	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
Methyl methacrylate	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
n-Butyl alcohol	ND	NA	100	NA		µg/L	6/27/2014 3:09 PM	
Pentachloroethane	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
Pentyl acetate	ND	NA	5.00	NA		µg/L	6/27/2014 3:09 PM	
Propionitrile	ND	NA	100	NA		µg/L	6/27/2014 3:09 PM	
tert-Amyl alcohol	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
tert-Amyl Ethyl Ether	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
tert-Amyl Methyl Ether	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
tert-Butyl alcohol	ND	NA	200	NA		µg/L	6/27/2014 3:09 PM	
tert-Butyl Ethyl Ether	ND	NA	1.00	NA		µg/L	6/27/2014 3:09 PM	
Tetrahydrofuran	ND	NA	50.0	NA		µg/L	6/27/2014 3:09 PM	
trans-1,4-Dichloro-2-butene	ND	NA	10.0	NA		µg/L	6/27/2014 3:09 PM	
Surr: 1,2-Dichloroethane-d4	103	NA	80-120	NA		%REC	6/27/2014 3:09 PM	
Surr: 4-Bromofluorobenzene	97.5	NA	80-120	NA		%REC	6/27/2014 3:09 PM	
Surr: Dibromofluoromethane	103	NA	80-120	NA		%REC	6/27/2014 3:09 PM	



# REI Consultants, Inc. - Analytical Report

WO#: 1406R91

Date Reported: 7/7/2014

Client:	GEORGIA PACIFIC / BIG ISLAND VA	Collection Date:	6/24/2014 12:00:00 AM
Project:	VPDES PERMIT RENEWAL	Date Received:	6/24/2014
Lab ID:	1406R91-08A	Matrix:	Waste Water
Client Sample ID:	TRIP BLANK	Site ID:	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Surr: Toluene-d8	98.7	NA	80-120	NA		%REC	6/27/2014 3:09 PM	

# CHAIN OF CUSTODY RECORD



Research Environmental & Industrial Consultants, Inc.

## MAIN LABORATORY & CORPORATE HEADQUARTERS:

P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813  
800-999-0105 • 304-255-2500 • www.reiclabs.com

**MID-OHIO VALLEY**  
Service Center  
101 17th Street  
Ashland, KY 41101  
606-393-5027

**SHENANDOAH**  
Service Center  
1557 Commerce Rd., Ste 201  
Verona, VA 24482  
540-248-0183

**ROANOKE**  
Service Center  
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Roanoke, VA 24019  
540-777-1276

**MORGANTOWN**  
Service Center  
16 Commerce Drive  
Westover, WV 26501  
304-241-5861

## SAMPLE LOG & ANALYSIS REQUEST

### TURNAROUND TIME



NORMAL

### RUSH TURNAROUND



5 DAY



3 DAY



2 DAY



1 DAY

\*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED

Oil & Grease  
Total Cyanide  
Total Phenols  
VOC (4 grabs)  
Total Metals  
COD, Ammonia, T. Phos, Total Organic Nitrogen  
TOC  
MLB-Surfactant  
Pesticides (608, 625) Sulfate, Bromide

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	1	5	3	1	2	3	1	0	0
Outfall 003-Grab	8-VOC vials	6-24-14	WW	Grab	X	X	X	X					
Outfall 003-Composite	1-1000mL P 2-500mL P 1-250mL P 1-250mL AG 4-1000mL G 5-500mL AG	6-23-14 09:00 6-24-14 09:11	WW	Comp					X	X	X	X	X

### ENTER PRESERVATIVE CODE:

- |                      |                    |
|----------------------|--------------------|
| 0 None               | 5 Sodium Hydroxide |
| 1 Hydrochloric Acid  | 6 Zinc Acetate     |
| 2 Nitric Acid        | 7 EDTA             |
| 3 Sulfuric Acid      | 8 Ascorbic Acid    |
| 4 Sodium Thiosulfate |                    |

### COMMENTS:

VOC Grab 1 collected 2 sets 6-23-14 10p  
VOC Grab 2 collected 6-23-14 1PM  
VOC Grab 3 collected 6-23-14 7PM  
VOC Grab 4 collected 6-23-14 1AM  
6/24/14  
\*one set spare if needed.

PER  
JULIE  
SG

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 1 °C ICED? Y ☒ N ☐

Containers provided by: ☒ REIC ☐ Client

Relinquished by (signature) <i>Julie Baty</i>	Date/Time 6-24-14 1050	Relinquished by (signature)	Date/Time	FAX RESULTS <input type="checkbox"/>	EMAIL RESULTS <input type="checkbox"/>
Received by (signature) <i>R. J. Tomlinson</i>	Date/Time 6-24-14 1050	Received by (signature)	Date/Time	SHIPMENT <input type="checkbox"/> Hand Delivered <input checked="" type="checkbox"/> Courier <input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> USPS <input type="checkbox"/> OTHER	

417127

## CHAIN OF CUSTODY RECORD



Research Environmental &amp; Industrial Consultants, Inc.

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MORGANTOWN  
Service Center  
16 Commerce Drive  
Westover, WV 26501  
304-241-5861

## SAMPLE LOG &amp; ANALYSIS REQUEST

## TURNAROUND TIME



NORMAL

## RUSH TURNAROUND



5 DAY



3 DAY



2 DAY



1 DAY

\*Rush work needs prior laboratory approval and will incur additional charges

Client:

GP Big Island LLC

Contact Person:

Julie Baty

QUOTE #

JP0424140

Fax:

Address

9363 Lee Jackson Hwy City Big Island

State VA

Zip 24526

Billing Address (if different)

City

State

Zip

Site ID &amp; State

VA

Project ID

VPOES Permit Renewal

Sampler

Gary Tomlinson

ANALYSIS &amp; METHOD REQUESTED

Oil + Grease

Metals \*see note

Ammonia, TKN, TPhos, Total Organic Nitrogen

TOC

COD

TSS, Sulfate, Bromide

Nitrate + Nitrite

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	1	2	3	1	3	0	3		
Outfall 002 Grab	2-1000mL 1-250 P 1-250 P	6-23-14 0816 6-24-14 0809	WWater	Grab	X								
Outfall 002 Composite	2-1000mL	6-23-14 0816 6-24-14 0815	WWater	Comp		X	X	X	X	X	X		
Outfall 001 Grab	1-1000mL	6-24-14 0826	WWATER	Grab	X								
Outfall 001 Composite	2-1000mL 1-250 P 1-250 P	6-23-14 0825 6-24-14 0831	WWater	Comp		X	X	X	X	X	X		
T.P. Blank	2 250												

## ENTER PRESERVATIVE CODE:

0 None

1 Hydrochloric Acid

2 Nitric Acid

3 Sulfuric Acid

4 Sodium Thiosulfate

5 Sodium Hydroxide

6 Zinc Acetate

7 EDTA

8 Ascorbic Acid

## COMMENTS:

Metals - All metals except  
Arsenic, beryllium,  
Thallium, Cyanide

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival:

1 °C

ICED?

Y

N

Containers provided by:

[X] REIC [ ] Client

Relinquished by (signature)	6/24/14 1040	Relinquished by (signature)	Date/Time	FAX RESULTS <input type="checkbox"/>	EMAIL RESULTS <input type="checkbox"/>
Received by (signature)	6-24-14 1050	Received by (signature)	Date/Time	SHIPMENT <input type="checkbox"/> Hand Delivered <input checked="" type="checkbox"/> Courier <input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> USPS <input type="checkbox"/> OTHER	

COC-NCR-050213



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1557 Commerce Road, Suite 201  
Verona, VA 24482  
TEL: 540.248.0183

16 Commerce Drive  
Westover, WV 26501  
TEL: 304.241.5861

Tuesday, September 16, 2014

Mr. Tim Pierce  
GEORGIA PACIFIC / BIG ISLAND VA  
9363 LEE JACKSON HWY  
PO BOX 40  
BIG ISLAND, VA 24526

TEL: (434) 299-5911

FAX: (434) 299-5725

RE: VPDES PERMIT RENEWAL

Work Order #: 1409A27

Dear Mr. Tim Pierce:

REI Consultants, Inc. received 4 sample(s) on 9/9/2014 for the analyses presented in the following report.

Sincerely,

Scott Gross

Project Manager



**Client:** GEORGIA PACIFIC / BIG ISLAND VA**Project:** VPDES PERMIT RENEWAL

---

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

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**DEFINITIONS:**

MCL: Maximum Contaminant Level

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).

NA: Not Applicable

ND: Not Detected at the PQL or MDL

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported.

TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.

Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

**QUALIFIERS:**

X: Reported value exceeds required MCL

B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.

H: Holding time for preparation or analysis has been exceeded.

J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.

S: % REC (% recovery) exceeds control limits

**CERTIFICATIONS:**

Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148

Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839

Roanoke, VA: VADCLS(VELAP) 460150

Verona, VA: VADCLS(VELAP) 460151

Ashland, KY: KYDEP 00094, WV 389

Morgantown, WV: WVDHHR 003112M, WVDEP 387

# REI Consultants, Inc. - Analytical Report

WO#: 1409A27

Date Reported: 9/16/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	9/9/2014 8:44:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	9/9/2014
<b>Lab ID:</b>	1409A27-01A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 001 GRAB	<b>Site ID:</b>	VIRGINIA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>E-COLI BY MPN - ROANOKE</b>								
				<b>Method: COLILERT MPN</b>			<b>Analyst: RP</b>	
E-Coli	2	NA	1	NA		MPN/100mL	9/10/2014 3:20 PM	VELAP
<b>FECAL COLIFORM BY MEMBRANE FILTER - ROANOKE</b>								
				<b>Method: SM9222 D-1997</b>			<b>Analyst: AW</b>	
Fecal Coliform	1	NA	1	NA		col/100mL	9/10/2014 2:58 PM	VELAP



# REI Consultants, Inc. - Analytical Report

WO#: 1409A27

Date Reported: 9/16/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	9/9/2014 8:31:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	9/9/2014
<b>Lab ID:</b>	1409A27-02A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 001	<b>Site ID:</b>	VIRGINIA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY			Method: EPA 300.0, Rev.2.1 (1993)			Analyst: CF		
Fluoride	0.08	NA	0.20	NA	J	mg/L	9/11/2014 6:44 AM	PA/VA

# REI Consultants, Inc. - Analytical Report

WO#: 1409A27

Date Reported: 9/16/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	9/9/2014 8:52:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	9/9/2014
<b>Lab ID:</b>	1409A27-03A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 002 GRAB	<b>Site ID:</b>	VIRGINIA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>E-COLI BY MPN - ROANOKE</b>								
				<b>Method: COLILERT MPN</b>			<b>Analyst: RP</b>	
E-Coli	7	NA	1	NA		MPN/100mL	9/10/2014 3:20 PM	VELAP
<b>FECAL COLIFORM BY MEMBRANE FILTER - ROANOKE</b>								
				<b>Method: SM9222 D-1997</b>			<b>Analyst: AW</b>	
Fecal Coliform	4	NA	1	NA		col/100mL	9/10/2014 2:58 PM	VELAP

# REI Consultants, Inc. - Analytical Report

WO#: 1409A27

Date Reported: 9/16/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	9/9/2014 8:23:00 AM
<b>Project:</b>	VPDES PERMIT RENEWAL	<b>Date Received:</b>	9/9/2014
<b>Lab ID:</b>	1409A27-04A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 002	<b>Site ID:</b>	VIRGINIA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY			Method: EPA 300.0, Rev.2.1 (1993)			Analyst: CF		
Fluoride	0.14	NA	0.20	NA	J	mg/L	9/10/2014 10:35 AM	PA/VA





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1557 Commerce Road, Suite 201  
Verona, VA 24482  
TEL: 540.248.0183

16 Commerce Drive  
Westover, WV 26501  
TEL: 304.241.5861

Thursday, September 18, 2014

Mr. Tim Pierce  
GEORGIA PACIFIC / BIG ISLAND VA  
9363 LEE JACKSON HWY  
PO BOX 40  
BIG ISLAND, VA 24526

TEL: (434) 299-5911  
FAX: (434) 299-5725

RE: VPDES RENEWAL

Work Order #: 1409A01

Dear Mr. Tim Pierce:

REI Consultants, Inc. received 4 sample(s) on 9/9/2014 for the analyses presented in the following report.

Sincerely,

Scott Gross  
Project Manager



**Client:** GEORGIA PACIFIC / BIG ISLAND VA**Project:** VPDES RENEWAL

---

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ND: Not Detected at the PQL or MDL

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

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TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.

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S: % REC (% recovery) exceeds control limits

**CERTIFICATIONS:**

Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148

Bloassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839

Roanoke, VA: VADCLS(VELAP) 460150

Verona, VA: VADCLS(VELAP) 460151

Ashland, KY: KYDEP 00094, WV 389

Morgantown, WV: WVDHHR 003112M, WVDEP 387



# REI Consultants, Inc. - Analytical Report

WO#: 1409A01

Date Reported: 9/18/2014

<b>Client:</b>	GEORGIA PACIFIC / BIG ISLAND VA	<b>Collection Date:</b>	9/9/2014 9:22:00 AM
<b>Project:</b>	VPDES RENEWAL	<b>Date Received:</b>	9/9/2014
<b>Lab ID:</b>	1409A01-01A	<b>Matrix:</b>	Waste Water
<b>Client Sample ID:</b>	OUTFALL 003	<b>Site ID:</b>	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
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## METALS BY ICP

Method: EPA 200.7 Rev. 4.4 (1994)

Analyst: JD

Arsenic	ND	NA	0.0200	NA		mg/L	9/16/2014 11:04 AM	PA/VA
Beryllium	ND	NA	0.0010	NA		mg/L	9/16/2014 11:04 AM	PA/VA

## SEMIVOLATILE ORGANIC COMPOUNDS

Method: EPA 625 (1982)

Analyst: JC

1,2-Diphenylhydrazine	ND	NA	0.0083	NA		mg/L	9/17/2014 12:30 AM	PA/VA
Surr: Nitrobenzene-d5	85.3	NA	62.2-110	NA		%REC	9/17/2014 12:30 AM	
Surr: 2-Fluorobiphenyl	79.5	NA	54.6-110	NA		%REC	9/17/2014 12:30 AM	
Surr: 4-Terphenyl-d14	90.3	NA	10.7-110	NA		%REC	9/17/2014 12:30 AM	

## ACROLEIN BY E624

Method: EPA 624

Analyst: JM

Acrolein	ND	NA	500	NA		µg/L	9/12/2014 2:42 PM	PA/VA
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## VOLATILE ORGANIC COMPOUNDS

Method: EPA 624

Analyst: JM

2-Chloroethyl vinyl ether	ND	NA	50.0	NA		µg/L	9/16/2014 10:01 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	98.7	NA	68.7-129	NA		%REC	9/16/2014 10:01 PM	
Surr: 4-Bromofluorobenzene	105	NA	71.8-127	NA		%REC	9/16/2014 10:01 PM	
Surr: Dibromofluoromethane	96.3	NA	74.3-124	NA		%REC	9/16/2014 10:01 PM	
Surr: Toluene-d8	102	NA	71.4-129	NA		%REC	9/16/2014 10:01 PM	

### Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

## SULFIDE

Method: SW9034 (1996)

Analyst: CC

Sulfide (As S)	ND	NA	1.00	NA		mg/L	9/16/2014 9:00 AM	
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## ANIONS by ION CHROMATOGRAPHY

Method: EPA 300.0, Rev.2.1 (1993)

Analyst: CF

Fluoride	0.21	NA	0.20	NA		mg/L	9/11/2014 6:25 AM	PA/VA
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## PHENOLICS

Method: EPA 420.1, Rev. 1978)

Analyst: JJ

Phenolics	ND	NA	0.010	NA		mg/L	9/15/2014 12:00 PM	PA/VA
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# REI Consultants, Inc. - Analytical Report

WO#: 1409A01

Date Reported: 9/18/2014

Client:	GEORGIA PACIFIC / BIG ISLAND VA	Collection Date:	9/9/2014 9:36:00 AM
Project:	VPDES RENEWAL	Date Received:	9/9/2014
Lab ID:	1409A01-02A	Matrix:	Waste Water
Client Sample ID:	OUTFALL 003 FECAL	Site ID:	VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
FECAL COLIFORM BY MEMBRANE FILTER - ROANOKE								
Fecal Coliform	13	NA	1	NA		col/100mL	9/10/2014 2:58 PM	VELAP

WO#: 1409A01

**Date Reported: 9/18/2014**

**Client:** GEORGIA PACIFIC / BIG ISLAND VA  
**Project:** VPDES RENEWAL  
**Lab ID:** 1409A01-03A  
**Client Sample ID:** OUTFALL 003 ECOLI

**Collection Date:** 9/9/2014 9:36:00 AM  
**Date Received:** 9/9/2014  
**Matrix:** Waste Water  
**Site ID:** VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
<b>E-COLI BY MPN - ROANOKE</b>	<b>Method: COLILERT MPN</b>					<b>Analyst: RP</b>		
E-Coli	10	NA	1	NA		MPN/100mL	9/10/2014 3:20 PM	VELAP

**REI Consultants, Inc. - Analytical Report**

WO#: 1409A01

Date Reported: 9/18/2014

Client: GEORGIA PACIFIC / BIG ISLAND VA  
Project: VPDES RENEWAL  
Lab ID: 1409A01-04A  
Client Sample ID: TRIP BLANK

Collection Date: 9/9/2014 12:00:00 AM  
Date Received: 9/9/2014  
Matrix: Trip Blank  
Site ID: VA

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
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**ACROLEIN BY E624**

Method: EPA 624

Analyst: JM

Acrolein	ND	NA	10	NA		µg/L	9/12/2014 2:09 PM	PA/VA
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**VOLATILE ORGANIC COMPOUNDS**

Method: EPA 624

Analyst: JM

2-Chloroethyl vinyl ether	ND	NA	5.00	NA		µg/L	9/12/2014 2:09 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	114	NA	68.7-129	NA		%REC	9/12/2014 2:09 PM	
Surr: 4-Bromofluorobenzene	105	NA	71.8-127	NA		%REC	9/12/2014 2:09 PM	
Surr: Dibromofluoromethane	102	NA	74.3-124	NA		%REC	9/12/2014 2:09 PM	
Surr: Toluene-d8	103	NA	71.4-129	NA		%REC	9/12/2014 2:09 PM	



## CHAIN OF CUSTODY RECORD



Research Environmental &amp; Industrial Consultants, Inc.

## MAIN LABORATORY &amp; CORPORATE HEADQUARTERS:

P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813  
800-999-0105 • 304-255-2500 • www.reiclabs.comMID-OHIO VALLEY  
Service Center  
101 17th Street  
Ashland, KY 41101  
606-393-5027SHENANDOAH  
Service Center  
1557 Commerce Rd., Ste 201  
Verona, VA 24482  
540-248-0183ROANOKE  
Service Center  
3029-C Peters Creek Rd  
Roanoke, VA 24019  
540-777-1276MORGANTOWN  
Service Center  
16 Commerce Drive  
Westover, WV 26501  
304-241-5861

Client: GP Big Island, LLC PO # 431508  
 Contact Person: Tim Pierce Phone: 180844  
 QUOTE # \_\_\_\_\_ Fax: \_\_\_\_\_ Email: thpierce@gapac.com  
 Address: 9363 Lee Jackson Hwy City: Big Island State: VA Zip: 24526  
 Billing Address (if different) \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Site ID & State: VA Project ID: VPDES Renewal Sampler: GT

## SAMPLE LOG &amp; ANALYSIS REQUEST

## TURNAROUND TIME

## RUSH TURNAROUND

☒ NORMAL☐ 5 DAY☐ 3 DAY☐ 2 DAY☐ 1 DAY

\*Rush work needs prior laboratory approval and will incur additional charges

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	0	1	2	3	0	8	4	4
Outfall 003	1-250 PL	09-20-14 9-9-14	WW	Comp	X								
	2-40 VDC	09-20-14 9-9-14	WW	Comp		X							
	2-40 VDC	09-20-14 9-9-14	WW	Comp			X						
	1-250 PL	09-20-14 9-9-14	WW	Comp				X					
	1-250 AG	09-20-14 9-9-14	WW	Comp					X				
	3-1000 AG	09-20-14 9-9-14	WW	Comp						X			
	1-500 PL	09-20-14 9-9-14	WW	Comp							X		
Trip Bikes	2 AS												
Outfall 003	2-100 PL	09-20-14 9-9-14	WW	Grab								X	
Outfall 003	1-100 PL	09-20-14 9-9-14	WW	Grab									X

ANALYSIS & METHOD REQUESTED  
 Fluoride  
 Acrolein  
 2-Chloroethyl Vinyl ether  
 Arsenic  
 Total Phenols  
 1,2-Diphenyl Sulfide  
 Fecal Coliform  
 E-Coli

## Preservative Codes:

0 None

1 Hydrochloric Acid

2 Nitric Acid

3 Sulfuric Acid

4 Sodium Thiosulfate

5 Sodium Hydroxide/

Sodium Arsenate

6 Sodium Hydroxide

7 Ascorbic Acid

8 Sodium Hydroxide/

Zinc Acetate

9 \_\_\_\_\_  
 \* (Use blank lines if using preservatives not listed.)ENTER  
PRESERVATIVE CODE

COMMENTS:

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 2 °C ICED? Y ☒ N ☐Containers provided by: ☒ REIC ☐ Client1 Cary Johnson  
Relinquished by Signature

9-9-14

Date/Time 1:45

2

Relinquished by Signature

Date/Time

FAX RESULTS ☐EMAIL RESULTS ☒SHIPMENT ☐ Hand Delivered ☒ Courier ☐ UPS ☐ FEDEX[www.ammara.com](http://www.ammara.com)



**GP-BIG ISLAND-VA**  
**Permit Renewal A6675**  
**TCDD/F by Method 1613**

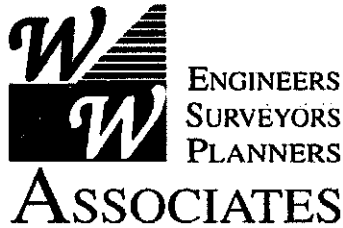
**Form 1: Sample and Laboratory Blank Data**

<b>Client Sample ID</b>	<u>Outfall 003</u>	<b>Date Sampled</b>	<u>5/5/2014</u>
<b>Lab Project ID</b>	<u>A6675</u>	<b>Analysis File</b>	<u>140515SC8</u>
<b>Client Project</b>	<u>Permit Renewal</u>	<b>Lab Sample ID</b>	<u>A6675_12048_DF_001</u>
<b>Date Received</b>	<u>5/7/2014</u>	<b>Matrix</b>	<u>Aqueous</u>
<b>Date Extracted</b>	<u>5/8/2014</u>	<b>Sample Size</b>	<u>1.21 L</u>
<b>Date Analyzed</b>	<u>5/15/2014</u>	<b>Dilution Factor</b>	<u>1</u>
<b>Analyst</b>	<u>PPH</u>	<b>GC Column</b>	<u>DB5</u>
		<b>Batch ID</b>	<u>12048</u>
		<b>ICAL ID</b>	<u>1172014</u>
		<b>VER File</b>	<u>140515SC1</u>
		<b>OPR File</b>	<u>140515SC2</u>
		<b>Blank File</b>	<u>140515SC3</u>

Compound	Concentration (ppq)		Flags	Ion Abundance Ratios		Acceptable Retention Time	
	Found	Reporting Limit		Found	QC Limit <sup>1</sup>	Found	QC Limit <sup>2</sup>
2,3,7,8-TCDD	ND	8.24		-	0.65-0.89	-	0.999-1.002
2,3,7,8-TCDF	ND	8.24		-	0.65-0.89	-	0.999-1.003

<sup>(1)</sup> QC limits for ratio of areas are from Method Table 9.

<sup>(2)</sup> QC limits for relative retention times are from Method Table 2.



August 8, 2014

Mr. Tim Pierce  
Environmental Manger  
GP Big Island LLC  
P.O. Box 40  
9363 Lee Jackson Highway  
Big Island, VA 24526

Re: VPDES Stormwater Sampling and Testing  
WWA Proj. No. 214035.00

Dear Mr. Pierce:

Please find enclosed a copy of the sampling log and lab test results for the above referenced project.

We appreciate the opportunity to be of continued service to GP Big Island LLC and look forward to working with you on future projects.

Should you have any questions, please feel free to call.

Sincerely,

WW Associates, Inc.

John M. Foltz EIT  
Project Engineer

Enclosures

P.O. Box 4119 • Lynchburg, Virginia 24502  
Telephone (434) 316-6080 • Fax (434) 316-6081

Lynchburg • Charlottesville

Georgia Pacific Stormwater Sampling Log  
Big Island, Virginia  
WWA Project No. 214035.00



Date of Rain Event: 7/3/2014 (Comp. for 007 and 021 and Grab for 018 taken on 8/1/14)  
Time at 0.10" during event: 14:05 (04:00 on 8/1/14)

Outfall No.	Sample By	Description of Outfall			Time of Sample and Flow Rate							
		Size (in)	Material	Slope (ft/ft)	Grab	Flow Rate (gpm)	1st Comp.	Flow Rate (gpm)	2nd Comp.	Flow Rate (gpm)	3rd Comp.	Flow Rate (gpm)
005	TP	18	HDPE n = 0.012	0.05	14:12	5	15:12	67	16:14	36	17:14	No Flow
007	MM	18	CIP n = 0.013	0.088	14:40	1	4:40 (8/1/14 by MF)	19	5:40 (8/1/14 by MF)	1	6:40 (8/1/14 by MF)	0.5
012	MF	24	RCP n = 0.013	0.016	14:25	776	15:30	22	16:35	14	17:35	9
014	JC	13	CIP n = 0.013	0.021	14:24	588	15:30	1.75	16:40	0.5	17:40	0.5
015	TP	48	CMP n = 0.025	0.010	14:19	8040	15:19	763	16:20	647	17:20	283
017	JC	24	CMP n = 0.025	0.021	14:18	1050	15:25	5	16:32	2.7	17:33	0.05
018	JC	Inlet			4:35 (8/1/14 by MF)	25	15:18	25	16:20	5	17:20	No Flow
021	TP	6	PVC n = 0.009	0.083	14:27	15	5:08 (8/1/14 by MF)	15	6:00 (8/1/14 by MF)	0.2	6:55 (8/1/14 by MF)	0.2
022	MF	36	CMP n = 0.025	0.057	14:10	5	15:10	5	16:10	5	17:10	5
023	MM	21	RCP n = 0.013	0.021	14:30	45	15:30	0.5	16:30	No Flow	17:30	No Flow
025	MF	36	RCP n = 0.013	0.042	14:20	370	15:25	85	16:30	20	17:30	20
028	MM	36	RCP n = 0.013	0.042	14:10	135	15:10	18	16:10	18	17:10	18





218 North Main St. ♦ P.O. Box 520 ♦ Culpeper, Virginia 22701 ♦ Tel: (540) 825-6660 ♦ Fax (540) 825-4961 ♦ [www.ess-services.com](http://www.ess-services.com)

## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

The test results submitted in this report relate only to the samples submitted and as received by Environmental Systems Service, Ltd (ESS).

ESS assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of ESS.

If you have received this report in error, please notify ESS immediately at (540) 825-6660.

*Angie Woodward*

Approved by: \_\_\_\_\_

A. Woodward/Technical Director

Reviewers Initials *AW*





## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0036954      Sample Source: Outfall 022  
Sample Date/Time: 07/03/2014 / 14:10      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	16	mg/l	2	SM 5210 B-2011	07/04/2014	07:30	AW
Total Suspended Solids	79.3	mg/l	1.00	SM 2540 D-2011	07/05/2014	12:35	JI
Nitrite + Nitrate	0.147	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	1.12	mg/l	0.250	EPA 351.2	07/14/2014	12:25	574
Chemical Oxygen Demand	23.2	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.46	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574

Sample ID#: 0036955      Sample Source: Outfall 022  
Sample Date/Time: 07/03/2014 / 17:22      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	4	mg/l	2	SM 5210 B-2011	07/04/2014	07:45	AW
Total Suspended Solids	14.4	mg/l	1.00	SM 2540 D-2011	07/05/2014	13:01	JI
Nitrite + Nitrate	0.104	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	0.535	mg/l	0.250	EPA 351.2	07/14/2014	12:25	574
Chemical Oxygen Demand	31.6	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.09	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
Iron, Total Recoverable	4.74	mg/l	0.0500	EPA 200.7	07/14/2014	15:35	574

Sample ID#: 0036956      Sample Source: Outfall 005  
Sample Date/Time: 07/03/2014 / 14:12      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	31	mg/l	2	SM 5210 B-2011	07/04/2014	07:00	AW
Total Suspended Solids	483	mg/l	1.00	SM 2540 D-2011	07/05/2014	13:02	JI
Nitrite + Nitrate	1.26	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	71.2	mg/l	0.250	EPA 351.2	07/14/2014	12:25	574
Chemical Oxygen Demand	424	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	1.22	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574





## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0036957      Sample Source: Outfall 005  
Sample Date/Time: 07/03/2014 / 16:14      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	10	mg/l	2	SM 5210 B-2011	07/04/2014	07:00	AW
Total Suspended Solids	35.0	mg/l	1.00	SM 2540 D-2011	07/05/2014	13:21	JI
Nitrite + Nitrate	0.784	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	0.895	mg/l	0.250	EPA 351.2	07/14/2014	12:25	574
Chemical Oxygen Demand	45.5	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.16	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES

Sample ID#: 0036958      Sample Source: Outfall 018  
Sample Date/Time: 07/03/2014 / 14:13      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	5	mg/l	2	SM 5210 B-2011	07/04/2014	07:30	AW
Total Suspended Solids	46.4	mg/l	1.00	SM 2540 D-2011	07/05/2014	13:26	JI
Nitrite + Nitrate	0.222	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	0.505	mg/l	0.250	EPA 351.2	07/14/2014	12:25	574
Chemical Oxygen Demand	28.8	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.10	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	**	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574

**COMMENT:**

\*\*Lab Error; HEM (O&G) sample was broken after receipt at sub-lab.

Sample ID#: 0036959      Sample Source: Outfall 018  
Sample Date/Time: 07/03/2014 / 16:20      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	17	mg/l	2	SM 5210 B-2011	07/04/2014	07:30	AW
Total Suspended Solids	9.18	mg/l	1.00	SM 2540 D-2011	07/05/2014	13:31	JI
Nitrite + Nitrate	4.13	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	1.93	mg/l	0.250	EPA 351.2	07/14/2014	12:25	574
Chemical Oxygen Demand	87.3	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.28	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES





## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

**Sample ID#:** 0036960 **Sample Source:** Outfall 015  
**Sample Date/Time:** 07/03/2014 / 14:19 **Date Received:** 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	6	mg/l	2	SM 5210 B-2011	07/04/2014	07:15	AW
Total Suspended Solids	40.6	mg/l	1.00	SM 2540 D-2011	07/05/2014	13:50	JI
Nitrite + Nitrate	0.264	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	1.02	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	39.9	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.13	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574

**Sample ID#:** 0036961 **Sample Source:** Outfall 015  
**Sample Date/Time:** 07/03/2014 / 17:16 **Date Received:** 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	7	mg/l	2	SM 5210 B-2011	07/04/2014	07:15	AW
Total Suspended Solids	74.6	mg/l	1.00	SM 2540 D-2011	07/05/2014	13:52	JI
Nitrite + Nitrate	0.595	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	1.33	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	62.2	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.34	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES

**Sample ID#:** 0036962 **Sample Source:** Outfall 025  
**Sample Date/Time:** 07/03/2014 / 14:20 **Date Received:** 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	35	mg/l	2	SM 5210 B-2011	07/04/2014	07:45	AW
Total Suspended Solids	3,080	mg/l	1.00	SM 2540 D-2011	07/05/2014	13:58	JI
Nitrite + Nitrate	0.318	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	10.1	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	782	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	4.39	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	10.0	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574





## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0036963 Sample Source: Outfall 025  
Sample Date/Time: 07/03/2014 / 17:30 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	<2	mg/l	2	SM 5210 B-2011	07/04/2014	07:45	AW
Total Suspended Solids	123	mg/l	1.00	SM 2540 D-2011	07/05/2014	14:04	JI
Nitrite + Nitrate	0.195	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	0.652	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	23.2	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.16	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
Iron, Total Recoverable	4.70	mg/l	0.0500	EPA 200.7	07/14/2014	15:35	574

Sample ID#: 0036964 Sample Source: Outfall 014  
Sample Date/Time: 07/03/2014 / 14:24 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	18	mg/l	2	SM 5210 B-2011	07/04/2014	07:15	AW
Total Suspended Solids	87.5	mg/l	1.00	SM 2540 D-2011	07/05/2014	14:20	JI
Nitrite + Nitrate	0.262	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	0.860	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	101	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.12	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574
Copper, Total Recoverable	0.00919	mg/l	0.00500	EPA 200.8	07/11/2014	10:10	574

Sample ID#: 0036965 Sample Source: Outfall 014  
Sample Date/Time: 07/03/2014 / 17:40 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	13	mg/l	2	SM 5210 B-2011	07/04/2014	07:15	AW
Total Suspended Solids	28.3	mg/l	1.00	SM 2540 D-2011	07/05/2014	14:25	JI
Nitrite + Nitrate	0.478	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	0.944	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	84.5	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.18	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
Copper, Total Recoverable	0.00977	mg/l	0.00500	EPA 200.8	07/11/2014	10:10	574





## Analytical Report

VW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0036966      Sample Source: Outfall 012  
Sample Date/Time: 07/03/2014 / 14:25      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	16	mg/l	2	SM 5210 B-2011	07/04/2014	07:00	AW
Total Suspended Solids	57.2	mg/l	1.00	SM 2540 D-2011	07/07/2014	15:54	JI
Nitrite + Nitrate	0.373	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	1.07	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	104	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.17	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574

Sample ID#: 0036967      Sample Source: Outfall 012  
Sample Date/Time: 07/03/2014 / 17:35      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	14	mg/l	2	SM 5210 B-2011	07/04/2014	07:00	AW
Total Suspended Solids	12.1	mg/l	1.00	SM 2540 D-2011	07/07/2014	15:56	JI
Nitrite + Nitrate	1.50	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	1.20	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	62.2	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.13	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES

Sample ID#: 0036968      Sample Source: Outfall 021  
Sample Date/Time: 07/03/2014 / 14:27      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	27	mg/l	2	SM 5210 B-2011	07/04/2014	07:30	AW
Total Suspended Solids	421	mg/l	1.00	SM 2540 D-2011	07/07/2014	15:56	JI
Nitrite + Nitrate	0.334	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	3.65	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	277	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.75	mg/l	0.05	SM 4500-P E-2011	07/19/2014	07:55	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574
Zinc, Total Recoverable	0.333	mg/l	0.0100	EPA 200.8	07/11/2014	10:10	574





## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0036969 Sample Source: Outfall 017  
Sample Date/Time: 07/03/2014 / 14:27 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	18	mg/l	2	SM 5210 B-2011	07/04/2014	07:15	AW
Total Suspended Solids	817	mg/l	1.00	SM 2540 D-2011	07/07/2014	16:19	JI
Nitrite + Nitrate	0.921	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	2.74	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	241	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.68	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574

Sample ID#: 0036970 Sample Source: Outfall 017  
Sample Date/Time: 07/03/2014 / 17:33 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	8	mg/l	2	SM 5210 B-2011	07/04/2014	07:30	AW
Total Suspended Solids	7.68	mg/l	1.00	SM 2540 D-2011	07/07/2014	16:19	JI
Nitrite + Nitrate	0.999	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	1.52	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	76.2	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.45	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES

Sample ID#: 0036971 Sample Source: Outfall 028  
Sample Date/Time: 07/03/2014 / 14:40 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	11	mg/l	2	SM 5210 B-2011	07/04/2014	08:00	AW
Total Suspended Solids	426	mg/l	1.00	SM 2540 D-2011	07/07/2014	16:21	JI
Nitrite + Nitrate	0.407	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	2.11	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	132	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.69	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574







## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0036972 Sample Source: Outfall 028  
Sample Date/Time: 07/03/2014 / 17:25 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	7	mg/l	2	SM 5210 B-2011	07/04/2014	08:00	AW
Total Suspended Solids	782	mg/l	1.00	SM 2540 D-2011	07/07/2014	16:36	JI
Nitrite + Nitrate	0.314	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	1.55	mg/l	0.250	EPA 351.2	07/15/2014	07:55	574
Chemical Oxygen Demand	110	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	1.58	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
Iron, Total Recoverable	159	mg/l	0.0500	EPA 200.7	07/14/2014	15:35	574

Sample ID#: 0036973 Sample Source: Outfall 007  
Sample Date/Time: 07/03/2014 / 14:40 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	6	mg/l	2	SM 5210 B-2011	07/04/2014	07:00	AW
Total Suspended Solids	8.10	mg/l	1.00	SM 2540 D-2011	07/07/2014	16:37	JI
Nitrite + Nitrate	0.474	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	0.559	mg/l	0.250	EPA 351.2	07/16/2014	07:55	574
Chemical Oxygen Demand	26.0	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.06	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	11:30	574

Sample ID#: 0036974 Sample Source: Outfall 023  
Sample Date/Time: 07/03/2014 / 14:44 Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	11	mg/l	2	SM 5210 B-2011	07/04/2014	07:45	AW
Total Suspended Solids	713	mg/l	1.00	SM 2540 D-2011	07/07/2014	16:43	JI
Nitrite + Nitrate	0.715	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	2.27	mg/l	0.250	EPA 351.2	07/16/2014	07:55	574
Chemical Oxygen Demand	185	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	1.07	mg/l	0.05	SM 4500-P E-2011	07/19/2014	12:25	ES
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	07/11/2014	16:30	574





## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 07/30/2014  
Job #: 0003344  
Customer #: 0003456  
Customer PO #:  
Collected By: ESS Employee  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0036975      Sample Source: Outfall 023  
Sample Date/Time: 07/03/2014 / 16:50      Date Received: 07/04/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	4	mg/l	2	SM 5210 B-2011	07/04/2014	07:45	AW
Total Suspended Solids	69.1	mg/l	1.00	SM 2540 D-2011	07/07/2014	17:00	JI
Nitrite + Nitrate	0.930	mg/l	0.0500	SM4500NO3F-2011	07/11/2014	10:00	574
Total Kjeldahl Nitrogen	0.924	mg/l	0.250	EPA 351.2	07/16/2014	07:55	574
Chemical Oxygen Demand	48.3	mg/l	10.0	EPA 410.4	07/15/2014	10:30	574
Phosphorus, Total	0.30	mg/l	0.05	SM 4500-P E-2011	07/16/2014	11:15	ES
Iron, Total Recoverable	1.81	mg/l	0.0500	EPA 200.7	07/14/2014	15:35	574

574 Samples subcontracted to VELAP ID# 460160





218 North Main St. ♦ P.O. Box 520 ♦ Culpeper, Virginia 22701 ♦ Tel: (540) 825-6660 ♦ Fax (540) 825-4961 ♦ <www.ess-services.com>

## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 08/18/2014  
Job #:  
Customer #: 0003456  
Customer PO #:  
Collected By: Customer  
Sample Location: Georgia-Pacific Storm Water

The test results submitted in this report relate only to the samples submitted and as received by Environmental Systems Service, Ltd (ESS).

ESS assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise noted.

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If you have received this report in error, please notify ESS immediately at (540) 825-6660.

*Angie Woodward*

Approved by: \_\_\_\_\_

A. Woodward/Technical Director

Reviewers Initials AW





## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 08/18/2014  
Job #:  
Customer #: 0003456  
Customer PO #:  
Collected By: Customer  
Sample Location: Georgia-Pacific Storm Water

---

Sample ID#:	0038275	Sample Source:	Outfall 018
Sample Date/Time:	08/01/2014 / 04:50	Date Received:	08/01/2014

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Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
HEM; Oil & Grease	<5.00	mg/l	5.00	EPA 1664A	08/08/2014	17:19	574

---

574 Samples subcontracted to VELAP ID# 460160



# SAMPLE CHAIN OF CUSTODY RECORD

Company W.W Associates  
 Contact Herb White  
 Address 147 Mill Ridge Rd  
 Address Lynchburg, Va. 24502  
 Phone 434-582-6175

## ENVIRONMENTAL SYSTEMS SERVICE, LTD.

218 North Main St.	500 Stone St.	8321 Leishear Road	3917 Westpoint Blvd.
Post Office Box 520	Post Office Box 736	Laurel, MD 20723	Suite E
Culpeper, VA 22701	Bedford, VA 24523		Winston-Salem, NC 27103
800-541-2116	540-586-5413	301-617-9582	910-659-3378
540-825-6660	Fax 540-586-5530	Fax 301-617-3426	Fax 910-659-3379

Project Name/Site Georgia-Pacific Storm Water P.O.# \_\_\_\_\_

Sampled By: \_\_\_\_\_

(Print Name)				(Signature)														COMMENTS	
ESS SAMPLE ID.	COLLECTION DATE	TIME	SAMPLE LOCATION	CONTAINERS			GRAB	COMP	SAMPLE MATRIX	PRESERVATIVE	BOD: TSS	NO2/NO3	TKN	T. Nitrogen	COD	T. Phosph.	Oil & Grease		
				SIZE	G/P	#													
			Outfall 018	1L	P	2	X		WW	none	X								T. Nitrogen is
			Outfall 018	250 ml	P	1	X		WW	H2SO4		X							the sum of
			Outfall 018	500 ml	P	1	X		WW	H2SO4			X	X	X	X			NO2/NO3 and
38275	8/1/2011	0450	Outfall 018	1 L	G	1	X		WW	H2SO4							X		TKN.
																			OTG
																			ONLY
																			Preservative
																			pH Check;
																			✓
Relinquished by:																			

Relinquished by: <u>[Signature]</u>	Date <u>8-1</u>	Time <u>9:30</u>	Received by: <u>[Signature]</u>	Relinquished by: <u>[Signature]</u>	Date <u>8/1/2014</u>	Time <u>1130</u>	Received by: <u>[Signature]</u>
Relinquished by: _____	Date _____	Time _____	Received by: _____	Relinquished by: _____	Date <u>8/1/14</u>	Time <u>1130</u>	Received for Laboratory by: <u>[Signature]</u>

Method of Delivery	Remarks: <u>once</u>	TAT	W.O.# _____	Amt Paid \$ _____
<input type="checkbox"/> UPS <input type="checkbox"/> UPS Overnight <input type="checkbox"/> Fed Ex <input checked="" type="checkbox"/> Hand Delivery <input type="checkbox"/> Post Office	Received @ <u>3:11</u> C <input type="checkbox"/> Under 2 hours	Normal _____ Rush _____ Need Results by _____ Extra charges will apply for Rush TAT.	W.O.# _____ W.O.# _____	Check # _____

Sample Condition "OK"  
Upon Receipt

Revised 11/04/04





218 North Main St. ♦ P.O. Box 520 ♦ Culpeper, Virginia 22701 ♦ Tel: (540) 825-6660 ♦ Fax (540) 825-4961 ♦ <www.ess-services.com>

## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 08/18/2014  
Job #:   
Customer #: 0003456  
Customer PO #:   
Collected By: Customer  
Sample Location: Georgia-Pacific Storm Water

The test results submitted in this report relate only to the samples submitted and as received by Environmental Systems Service, Ltd (ESS).

ESS assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of ESS.

If you have received this report in error, please notify ESS immediately at (540) 825-6660.

*Angie Woodward*

Approved by: \_\_\_\_\_

A. Woodward/Technical Director

Reviewers Initials AW







## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 08/18/2014  
Job #:   
Customer #: 0003456  
Customer PO #:   
Collected By: Customer  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0038276      Sample Source: Outfall 007  
Sample Date/Time: 08/01/2014 / 04:50      Date Received: 08/01/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	8	mg/l	2	SM 5210 B-2011	08/01/2014	12:30	KK
Total Suspended Solids	2.00	mg/l	1.00	SM 2540 D-2011	08/04/2014	12:31	JL
Nitrite + Nitrate	0.0980	mg/l	0.0500	SM4500NO3F-2011	08/04/2014	11:30	574
Total Kjeldahl Nitrogen	<0.50	mg/l	0.50	SM 4500 NH3C-2011	08/07/2014	12:51	ES
Chemical Oxygen Demand	<10.0	mg/l	10.0	EPA 410.4	08/14/2014	09:00	JLC
Phosphorus, Total	<0.05	mg/l	0.05	SM 4500-P E-2011	08/05/2014	13:40	ES

74 Samples subcontracted to VELAP ID# 460160



**Company** W.W. Associates  
**Contact** Herb White  
**Address** 147 Mill Ridge Rd  
**Address** Lynchburg, Va. 24502  
**Phone** 434-582-6175

**Contact** Herb White

**Address** 147 Mill Ridge Rd

**Address** \_ Lynchburge, Va. 24502

**Phone** 434-582-6175

Project Name/Site Georgia -Pacific Storm Water P.O.# \_\_\_\_\_

Sampled By: \_\_\_\_\_

(Print Name)

(Signature)

[illegible]

Date \_\_\_\_\_

Time

Received by:

Relinquished by:

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[illegible]

Date \_\_\_\_\_

Time

Received by:

Delivered by

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3



Remarks: inve  
Received @ 3.1 C  
☐ Under 2 hours

TAT

Normal \_\_\_\_\_ Rush \_\_\_\_\_  
Need Results by \_\_\_\_\_  
Extra charges will apply for Rush TAT.

W.O.#	
W.O.#	

Amt Paid \$ \_\_\_\_\_  
Check # \_\_\_\_\_

Revised 11/04/04

**Sample Condition "OK"  
Upon Receipt**





218 North Main St. ♦ P.O. Box 520 ♦ Culpeper, Virginia 22701 ♦ Tel: (540) 825-6660 ♦ Fax (540) 825-4961 ♦ <www.ess-services.com>

## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 08/18/2014  
Job #:  
Customer #: 0003456  
Customer PO #:  
Collected By: Customer  
Sample Location: Georgia-Pacific Storm Water

The test results submitted in this report relate only to the samples submitted and as received by Environmental Systems Service, Ltd (ESS).

ESS assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise noted.

This laboratory report may not be reproduced, except in full, without the written approval of ESS.

If you have received this report in error, please notify ESS immediately at (540) 825-6660.

Approved by: Angie Woodward

A. Woodward/Technical Director

Reviewers Initials AW







## Analytical Report

WW Associates  
P. O. Box 4119  
Lynchburg, VA 24502

Report Date: 08/18/2014  
Job #:   
Customer #: 0003456  
Customer PO #:   
Collected By: Customer  
Sample Location: Georgia-Pacific Storm Water

Sample ID#: 0038277      Sample Source: Outfall 021  
Sample Date/Time: 08/01/2014 / 05:15      Date Received: 08/01/2014

Parameter	Results	Unit	Report Limit	Method	Analysis Date	Time	INIT
Biochemical Oxygen Demand	19	mg/l	2	SM 5210 B-2011	08/01/2014	12:30	KK
Total Suspended Solids	12.2	mg/l	1.00	SM 2540 D-2011	08/04/2014	12:34	JI
Nitrite + Nitrate	0.154	mg/l	0.0500	SM4500NO3F-2011	08/04/2014	11:30	574
Total Kjeldahl Nitrogen	1.01	mg/l	0.50	SM 4500 NH3C-2011	08/07/2014	12:51	ES
Chemical Oxygen Demand	59.4	mg/l	10.0	EPA 410.4	08/14/2014	09:00	JLC
Phosphorus, Total	0.12	mg/l	0.05	SM 4500-P E-2011	08/05/2014	13:40	ES
Zinc, Total Recoverable	<0.0500	mg/l	0.0500	EPA 200.7	08/05/2014	08:30	574

574 Samples subcontracted to VELAP ID# 460160





# SAMPLE CHAIN OF CUSTODY RECORD

Company W.W Associates  
 Contact Herb White  
 Address 147 Mill Ridge Rd  
 Address Lynchburg, Va. 24502  
 Phone 434-582-6175

## ENVIRONMENTAL SYSTEMS SERVICE, LTD.

218 North Main St.	500 Stone St.	8321 Leishear Road	3917 Westpoint Blvd.
Post Office Box 520	Post Office Box 736	Laurel, MD 20723	Suite E
Culpeper, VA 22701	Bedford, VA 24523		Winston-Salem, NC 27103
800-541-2116	540-586-5413	301-617-9582	910-659-3378
540-825-6660	Fax 540-586-5530	Fax 301-617-3426	Fax 910-659-3379

Project Name/Site Georgia -Pacific Storm Water P.O.# \_\_\_\_\_

Sampled By: \_\_\_\_\_

### ANALYSES

(Print Name)			(Signature)																		
ESS SAMPLE ID.	COLLECTION		SAMPLE LOCATION	CONTAINERS			GRAB	COMP	SAMPLE												COMMENTS
	DATE	TIME		SIZE	G/P	#			MATRIX	PRESERVATIVE	BOD: TSS	NO2/NO3	TKN	T. Nitrogen	COD	T. Phosph.	T-Zinc				
38277	8/1/2014	0515	Outfall 021	1L	P	2		X	WW	none	X									T. Nitrogen is	
↓	↓	↓	Outfall 021	250 ml	P	1		X	WW	H2SO4		X								the sum of	
			Outfall 021	500 ml	P	1		X	WW	H2SO4			X	X	X	X				NO2/NO3 and	
			Outfall 021	250ml	P	1		X	WW	HNO3							X			TKN.	
																				T-Zn QI, 10 Ug/L	
																				Preservative	
																				pH Check:	
																				22	

Relinquished by: <u>J. M. Felt</u>	Date: <u>8-1</u>	Time: <u>9:30</u>	Received by: <u>Sean [Signature]</u>	Relinquished by: <u>Sean [Signature]</u>	Date: <u>8/1</u>	Time: <u>11:30</u>	Received by: <u>[Signature]</u>
Relinquished by: _____	Date: _____	Time: _____	Received by: _____	Relinquished by: _____	Date: <u>8/1/04</u>	Time: <u>11:30</u>	Received for Laboratory by: <u>[Signature]</u>

Method of Delivery	Remarks: <u>OK</u>	TAT	
<input type="checkbox"/> UPS <input type="checkbox"/> Fed Ex <input checked="" type="checkbox"/> Hand Delivery <input type="checkbox"/> UPS Overnight <input type="checkbox"/> Post Office	Received @ <u>3.1</u> C <input type="checkbox"/> Under 2 hours	Normal _____ Rush _____ Need Results by _____ Extra charges will apply for Rush TAT.	W.O.# _____ Amt Paid \$ _____ W.O.# _____ Check # _____

Revised 11/04/04

Sample Condition "OK"  
 Upon Receipt

# Georgia Pacific pH Table

Outfall	GRAB		COMPOSITE						COMMENTS
	TIME	pH	TIME	pH 1	TIME	pH 2	TIME	pH 3	
005	1412 / 1418	6.64 @ 24.2	1512 / 1520	6.46 @ 24.4	1614 / 1622	6.64 @ 19.9	*	*	
007	1440 / 1442	7.11 @ 24.4	*	*	*	*	*	*	
012	1425 / 1429	7.09 @ 23.2	1530 / 1535	7.31 @ 22.0	1635 / 1639	6.80 @ 19.5	1735 / 1740	7.15 @ 18.6	
014	1424 / 1430	6.77 @ 23.5	1526 / 1532	7.02 @ 23.8	1630 / 1640	7.03 @ 22.6	1736 / 1741	6.91 @ 21.4	Also metals grab extra per Julie
015	1419 / 1425	7.37 @ 22.2	1519 / 1525	6.29 @ 19.4	1620 / 1626	6.69 @ 18.1	1718 / 1723	6.46 @ 17.7	
017	1425 / 1428	7.26 @ 23.7	1525 / 1530	6.99 @ 22.0	1632 / 1640	7.50 @ 19.6	1733 / 1738	7.23 @ 18.3	
018	1413 / 1421	6.37 @ 21.6	1515 / 1522	6.17 @ 21.1	1617 / 1621	6.80 @ 21.0	*	*	
021	1427 / 1429	7.31 @ 23.2	*	*	*	*	*	*	Collected metal from grab per Julie
022	1410 / 1419	6.92 @ 21.5	1516 / 1523	7.27 @ 19.3	1616 / 1623	6.88 @ 18.4	1718 / 1723	6.84 @ 17.4	
023	1430 / 1439	7.20 @ 24.6	1530 / 1539	7.34 @ 19.1	*	*	*	*	
025	1420 / 1430	7.47 @ 20.5	1525 / 1534	7.47 @ 19.2	1630 / 1639	7.43 @ 18.7	1730 / 1733	7.43 @ 16.8	
028	1430 / 1438	7.07 @ 17.3	1530 / 1537	7.16 @ 16.7	1628 / 1633	6.86 @ 15.7	1725 / 1732	6.47 @ 14.8	

NOTES: (collection time / analysis time)

\* = dry

outfall	parameter	freq.	date	value	total rainfall	hrs. between	total flow	duration	outfall sampled
555	BOD	1	9/21/2013	<5 mg/l	1.0"	216	.062 mg	6 hr	13
	TSS	1		41 mg/l					
	pH	1		7.5					
	TKN	1		0.74 mg/l					
12	BOD	1	9/21/2013	5 mg/l	1.0"	216	.135 mg	6 hr	
	TSS	1		43 mg/l					
	pH	1		7.6					
	TKN	1		1.48 mg/l					
14	BOD	1	9/21/2013	5 mg/l	1.0"	216	.026 mg	6 hr	
	TSS	1		86 mg/l					
	pH	1		7.60					
	COD	1		60 mg/l					
	TKN	1		0.94 mg/l					
	Cu total rec.	3	11/26/2013	14 ug/l	2.7"	192	.071 mg	22 hr	
	Cu total rec.		3/2/2014	6.6 ug/l	1.5"	216	.039 mg	18 hr	
	Cu total rec.		5/28/2014	5.2 ug/l	.3"	312	.008 mg	1 hr	
	Cu total rec.	avg.							
15	BOD	1	9/21/2013	5 mg/l	1.0"	216	.333 mg	6 hr	
	TKN	1		1.09 mg/l					
17	BOD	1	9/21/2013	9 mg/l	1.0"	216	.040 mg	6 hr	
	TSS	1		41 mg/l					
	COD	1		43 mg/l					
	TKN	1		1.83 mg/l					
18	pH	1	9/21/2013	8.1	1.0"	216	.049 mg	6 hr	
	TSS	1		129 mg/l					
	BOD	2	11/26/2013	<5 mg/l	2.7"	192	.133 mg	22 hr	
	BOD		9/21/2013	0.64 mg/l	1.0"	216	.049 mg	6 hr	
	TKN	1							
21	BOD	1	9/21/2013	13 mg/l	1.0"	216	.006 mg	6 hr	
	TSS	1		61 mg/l					
	pH	1		7.6					
	TKN	1		0.80 mg/l					
	Zn total rec.	3	10/7/2013	54 ug/l	1.5"	360	.009 mg	4 hr	
	Zn total rec.		3/2/2014	113 ug/l	1.5"	216	.009 mg	18 hr	
	Zn total rec.		5/28/2014	103 ug/l	.3"	312	.002 mg	1 hr	
	Zn total rec.	avg.							
22	TSS	1	10/7/2013	14 mg/l	1.5"	360	.415 mg	4 hr	
	NO3/NO2	1		0.2 mg/l					
	Fe, totrec	1		4.86 mg/l					
23	TSS	1	10/7/2013	40 mg/l	1.5"	360	.06 mg	4 hr	
	COD	1		70 mg/l					
	TKN	1		2.12 mg/l					
	Fe total rec.	1		2.34 mg/l					
25	TSS	1	11/26/2013	181 mg/l	2.7"	192	1.241 mg	22 hr	
	TKN	1		1.15 mg/l					
	Fe total rec.	1		8.66 mg/l					
28	TSS	1	11/26/2013	92 mg/l	2.7"	192	.303 mg	22 hr	
	Fe total rec.	1		52 mg/l					



## VPDES PERMIT APPLICATION ADDENDUM - SUPPLEMENTARY INFORMATION

### A. General Information

1. Entity to whom the permit is to be issued: GP Big Island, LLC  
*Who will be legally responsible for the wastewater treatment facilities and compliance with the permit? This may or may not be the facility or property owner.*
2. Classify the discharge as one of the following by checking the appropriate line:  
☒ a. Existing discharge  
☐ b. Proposed discharge  
☐ c. Proposed expansion of an existing discharge
3. Year the current wastewater treatment facility began operation: 1976
4. Provide NAICS Code (Industrial Only) 32213 & 32211

### B. Location

1. Is this facility located within city or town boundaries? Y / (N)
2. (New Issuances & Modifications Only) What is the tax map parcel number for the land where this facility is located? N/A
3. For the facility to be covered by this permit, how many acres will be disturbed during the next five years due to new construction activities? 2 or more
4. Attach to the back of this application a location map(s) which may be traced from or is/are a production of a U.S. Geological Survey topographic quadrangle(s) or other appropriately scaled contour map(s). The location map(s) shall show the following: See topo map in Tab 1 (Form 1)
  - a. Treatment Plant
  - b. Discharge point
  - c. Receiving waters
  - d. Boundaries of the property on which the treatment plant is located, or to be located.
  - e. Distance from the treatment plant to the nearest: (Indicate "not applicable" for any distance greater than 2000 feet)
    - i. Residence
    - ii. Distribution line for potable water supply
    - iii. Reservoir, well, or other source of water supply
    - iv. Recreational area
  - f. Distance from the discharge point to the nearest: (Indicate "not applicable" for any distance greater than 15 miles)
    - i. Downstream community
    - ii. Upstream and downstream water intake points
    - iii. Shellfishing waters
    - iv. Wetlands area
    - v. Downstream impoundment
    - vi. Downstream recreational area

C. Discharge Description

1. Provide a brief description of the wastewater treatment scheme. Also, attach to this application, a process flow diagram showing each process unit of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system.

Treatment is provided by extended aeration activated sludge process. Wastewater from the mill is pumped through three pump stations to a primary clarifier/equalization basins/aeration basin/secondary clarifier and a polishing pond before being discharged to the James River through a diffuser.

See flow diagram in Tab 3, Attachment A to Form 2C.

2. What is the design average flow of this facility? 10.87 MGD  
Industrial facilities: What is the max. 30-day avg. production level (include units)? See Form 2C.III.
3. In addition to the above design flow or production level, should the permit be written with limits for any other discharge flow tiers or production levels? Y / (N)

If "Yes", please specify the other flow tiers (in MGD) or production levels: \_\_\_\_\_

*Please consider: Is your facility's design flow considerably greater than your current flow? Do you plan to expand operations during the next five years?*

4. Nature of operations generating wastewater: See Tab 2, Form 2C, II.B. for Outfall 003.

0.04 % of flow from domestic connections/sources

Number of private residences to be served by the wastewater treatment facilities:

0 X 1-49    50 or more

99.96 % of flow from non-domestic connections/sources

5. Mode of discharge: X Continuous    Intermittent    Seasonal  
Describe frequency and duration of intermittent or seasonal discharges:

6. Identify the characteristics of the receiving stream at the point just above the facility's discharge point:

X Permanent stream, never dry

   Intermittent stream, usually flowing, sometimes dry

   Ephemeral stream, wet-weather flow, often dry

   Effluent-dependent stream, usually or always dry

   Lake or pond at or below the discharge point

   Other: \_\_\_\_\_

E. Anticipated Phasing Schedule for Plant Capacity - Proposed / Expanding Discharges

If this application is for a proposed or expanded discharge(s), complete the phasing schedule below beginning with the year in which construction completion is anticipated and progressing in increments of 5 years for 30 years thereafter.

Proposed Design Capacity: N/A MGD

Anticipated Date of Construction Completion: \_\_\_\_\_  
Month Year

---

Years after Completion	Projected Flow (MGD)
0	
5	
10	
15	
20	
25	
30	

F. Interim Facilities

Are the wastewater treatment facilities interim? (designed for a useful life of less than 5 years)

\_\_\_\_\_ Yes X No

If so, provide the estimated date to be discontinued (month, year) \_\_\_\_\_, and the name and location of the intended replacement facility.

---

Name / Location

G. Privately Owned Treatment Works

If this application is for a privately owned treatment works serving, or designed to serve, 50 or more residences, you must include with your application notification from the State Corporation Commission that you are incorporated in the Commonwealth AND verification from the SCC that you are in compliance with all regulations and relevant orders of the State Corporation Commission. Incorporated also includes Limited Liability Companies (LLCs), Limited Partnerships (LPs) and certificates of authority. N/A

H. Consent to Receive Electronic Mail

The Department of Environmental Quality (DEQ) may deliver permits and certifications (this includes permit issuances, reissuances, modifications, revocation and reissuances, terminations and denials) to recipients, including applicants or permittees, by electronically certified mail where the recipients notify DEQ of their consent to receive mail electronically (§ 10.1-1183). Check *only one* of the following to consent to or decline receipt of electronic mail from DEQ as follows:

- ☒ Applicant or permittee agrees to receive by electronic mail the permit that may be issued for the proposed pollutant management activity, and to certify receipt of such electronic mail when requested by the DEQ.
- ☐ Applicant or permittee declines to receive by electronic mail the permit associated with the permit that may be issued for the proposed pollutant management activity.

## **Structural Integrity of the Big Island Mill's**

### **Wastewater Treatment System (WWTS) Impoundments**

The earthen berms along the eastern edge of the aeration basin and polishing pond in the Mill's wastewater treatment system (WWTS) are situated parallel to the James River. The Mill has conducted several assessments over the years to ensure the structural integrity of these berms forming the east side of the impoundments. The summary of these assessments are summarized below:

- In July 2005, a geotechnical evaluation of the aeration and polishing pond berms was conducted by Professional Geological Services, LLC that included the following:
  - Borings and auger probes with temporary piezometer installations;
  - Soils classification and analyses including slope stability analysis;
  - Ground water surface evaluations.
- In August 2009 and July 2013, visual inspections were conducted by two independent consulting firms to ensure the structural integrity of the pond berms is maintained.

Based on the above evaluations, the continuing maintenance plan for the berms includes:

- Install geotextile fabrics and additional rip-rap on the riverside of the berms as needed.
- Remove mature vegetation from the berms of the ponds. The berms are periodically bush hogged.
- Annually inspect the berms for evidence of leakage or erosional damage.